Celebrating Failure: The Effects of Failure Awards on Risk-Taking and Escalation of Commitment

Rebecca Sabel
Giessen University (Germany)
Rebecca.Sabel@wirtschaft.uni-giessen.de

Hannes Gerstel
Giessen University (Germany)
Hannes.Gerstel@wirtschaft.uni-giessen.de

Arnt Wöhrmann
Giessen University (Germany)
Arnt.Woehrmann@wirtschaft.uni-giessen.de
Licher Str. 62,
35394 Giessen, Germany
(corresponding author)

Abstract

Innovations and efficient resource allocations are essential for firm success. However, managers' "fear of failure" often prevents firms from achieving these goals. To counteract this fear, firms have started granting Failure Awards. Failure Awards reward managers who initiate a promising but risky idea or project that eventually had to be terminated when failure became imminent. In this study, we examine whether Failure Awards promote risk-taking and simultaneously reduce resource wastage by mitigating escalation of commitment (EoC). We conduct an experiment in which we manipulated whether a Failure Award was present or absent. In the Failure Award present treatments, we manipulated whether the Failure Award emphasized risk-taking (innovation-type Failure Award) or the early termination of failing projects (discontinuation-type Failure Award). In line with our predictions, we find that Failure Awards increase risk-taking, irrespective of the type. Furthermore, we find that EoC is significantly reduced if the Failure Award emphasizes discontinuation but not if it promotes risk-taking.

Keywords: Escalation of commitment, Failure Award, fear of failure, psychological safety, risk-taking

JEL: M41

Data Availability: Contact the corresponding author.

We thank Jeremiah Bentley, Willie Choi, Victor van Pelt, Todd Thornock, and participants of the 2023 EXRIMA Conference, 2022 CAAA Annual Meeting, 2022 AAA Annual Meeting, and the 2022 ENEAR Conference and Doctoral Colloquium. We appreciate the financial support provided by The Chartered Institute of Management Accountants (CIMA).

I. Introduction

Failure is ubiquitous in organizations and often unavoidable on the path to success. However, employees often exhibit a fear of failure. Survey results indicate that 40% of employees are afraid of failure and thus spend 20-40% of their time worrying about making mistakes (Brassey et al., 2019). From a firm perspective, this fear of failure has a negative impact on firm performance.

First, the fear of failure prevents innovation despite its importance for firms' growth, efficiency, and productivity (Birkinshaw & Haas, 2016a). Innovations are subject to high uncertainty and closely linked to failure (Fischer et al., 2018). For instance, new product developments exhibit failure rates of 40% on average (Knudsen et al., 2023). Employees fear such high failure rates and thus exhibit risk-averse behavior to avoid the negative repercussions of failure, e.g., for their career or reputation (García-Granero et al., 2015; Wu, 2008; Zhou & George, 2001). In this vein, in a survey by the Boston Consulting Group, 31% of the respondents identify a risk-averse culture as a key obstacle to innovation (Birkinshaw & Haas, 2016b). Risk aversion gives rise to opportunity costs for (risk-neutral) shareholders if risk prevents managers from investing in projects with high expected returns (Baysinger et al., 1991; Eisenhardt, 1989; Wiseman & Gomez-Mejia, 1998).

Second, the fear of failure fosters escalation of commitment (EoC) (Johnson, 2017). EoC is a cognitive bias also known as "[o]ne of the most robust and costly decision errors" (Sleesman et al., 2012). It occurs when decision-makers continue investing in a losing course of action, e.g., a poorly performing project, although withdrawal is economically preferred (Brockner, 1992; Sleesman et al., 2012; Staw, 1976). Employees afraid of failure hesitate to admit that it was a mistake to have started the (failing) project in the first place. Thus, to prevent image loss, they continue investing and hope for a return to profitability (Edmondson, 2003; Sleesman et al., 2012).

As the fear of failure may prevent innovation and increase escalation, management controls that attenuate such negative effects are required. In practice, an increasing number of firms have moved away from only rewarding success and have started to also grant *Failure Awards* to counteract the fear of failure and its negative impact on decision-making and firm performance (Johnson, 2017; Morgan, 2015).[1] Failure Awards are associated with no or a merely symbolic financial reward and rely on "celebrating failure", e.g., by granting awards to employees during official ceremonies (Johnson, 2017; Supercell, 2021; TATA, 2021). Astro Teller, the director of Google's R&D division, "Google X", explains why Google uses Failure Awards as follows: "You must reward people for failing, […]. If not, they won't take risks and make breakthroughs. If you don't reward failure, people will hang on to a doomed idea for fear of the consequences. That wastes time […]." (Grossman, 2014). This statement thus underlines the two goals of Failure Awards: (1) to encourage risk-taking and thus innovation and (2) to save resources via the early termination of failing projects (Johnson, 2017; Leber, 2016).

Whether Failure Awards can achieve these goals is an open question, as there is no empirical evidence of their effectiveness. This is where our study intends to contribute. We conduct an experiment to investigate whether Failure Awards can be used as a management control to promote risk-taking and reduce EoC.

Anecdotal evidence suggests that several types of Failure Awards exist. While the criteria for receiving a Failure Award (i.e., (i) risk-taking, (ii) failure, (iii) deliberate discontinuation)

[1] For instance, the marketing and communication agency Hill Holiday grants the "Epic Fail Award" (Proulx, 2019). Proctor & Gamble has introduced the "Heroic Failure Award" (Morgan, 2015). Coca-Cola has an "Innovation Award" that celebrates projects that have failed (Clifford, 2019). NASA grants the "Lean Forward; Fail Smart Award" (NASA, 2021). Tata grants the "Dare to Try" award to failed projects (Waczek, 2012). Supercell, a mobile game developer, opens a bottle of champagne for every failure (Supercell, 2021). Google X rewards failure through applause (Leber, 2016), and W.L. Gore, a manufacturing company, celebrates failing projects that have been discontinued with beer and champagne (Deutschman, 2004).

are usually identical, some Failure Awards put more emphasis on taking risk (*innovation-type* Failure Award), while others emphasize the timely termination of failing projects (*discontinuation-type* Failure Award).[2] We therefore focus on the two endpoints of this continuum, i.e., *innovation-type* and *discontinuation-type* Failure Awards, and examine their effects on risk-taking and EoC.

We argue that both types of awards reduce the fear of failure by inducing psychological safety. Psychological safety is the feeling of safety that enables interpersonal risk-taking (Edmondson, 1999). This feeling makes decision-makers less afraid of the negative consequences of failure for their image or career. Thus, they are more willing to start risky projects. Consequently, hypothesis 1a (hypothesis 1b) predicts that employees take more risks when discontinuation-type (innovation-type) Failure Awards are present rather than absent. Notably, innovation-type Failure Awards explicitly encourage decision-makers to feel safe to experiment and take risks. Whether this more direct emphasis on experimentation and risk-raking results in more risk-taking under innovation-type instead of discontinuation-type Failure Awards leads to our first research question (RQ1).

As the fear of failure may also lead to escalation of commitment, we examine whether Failure Awards also reduce EoC if psychological safety is established. Both innovation-type and discontinuation-type Failure Awards make decision-makers feel safe to accept failure, as they do not anticipate the negative consequences of failure. Thus, they are more willing to discontinue a failing project. While this leads to a clear prediction for lower EoC in the case of Failure Awards

[2] For example, Hill Holliday has introduced the "Epic Fail Award" to "[…] cultivate the kind of guts and appetite for risk-taking that's required of true innovators." (Proulx, 2019). Similarly, Proctor & Gamble grants the "Heroic Failure Award" for taking the greatest "intelligent" risk (Anthony, 2020). W.L. Gore, on the other hand, celebrates failure with beer and champagne when "a project doesn't work out and the team kills it" (Deutschman, 2004), thus emphasizing early termination of a failing project. The "Innovation Award" at Coca-Cola stresses the importance of "killing zombies", i.e., killing products that do not work, which emphasizes the need for de-escalation (Clifford, 2019).

highlighting discontinuation (H2), the effect of innovation-type Failure Awards is less clear, as a second effect must be considered. As mentioned above, the innovation-type Failure Award explicitly encourages employees to experiment. Thus, they may also hold on to a failing project, as they take the risk of betting on the small chance of turning the project profitable. Due to this opposing effect, we pose a research question on whether Failure Awards highlighting innovation effectively reduce EoC (RQ2).

To test our predictions and answer our research questions, we employ a 2×1+1 between-subjects experimental design.[3] Participants in the Failure Award absent treatment do not receive a Failure Award. Nested within the Failure Award present condition, we manipulate the *type* of the award on two levels (*innovation-type* vs. *discontinuation-type* Failure Award). The operationalization is derived from practical examples of Failure Awards that either emphasize the importance of taking risks and innovating or of stopping resource wastage in failing projects.

Participants in the experiment must decide whether to invest in a project with low risk (and low expected returns) or in a project with high risk (and high expected returns). Risk-taking, our first dependent variable, is measured based on which project is selected. Similar to Seybert (2010), Brink et al. (2020), and Denison (2009), participants eventually learn that future returns are lower than expected, indicating project failure. The participants are then asked to recommend to the management whether their project should be continued. This recommendation is our second dependent variable that captures EoC.

In line with our predictions in H1a and H1b, we find that Failure Awards increase risk-taking irrespective of their type. However, we do not find that risk-taking is higher for innovation-

[3] The research was conducted in an ethical manner. Specifically, subjects were treated anonymously in accordance with the relevant data protection regulations and were not exposed to specific risks. Furthermore, subjects were not deceived in any way or at any time. The institution at which the study was conducted does not have a review board to provide ethical clearance.

type Failure Awards than for discontinuation-type Failure Awards, which answers our first research question (RQ1). Furthermore, we find that EoC decreases when discontinuation-type Failure Awards are used (H2). Regarding our second research question (RQ2), innovation-type Failure Awards do not reduce EoC. Accordingly, only discontinuation-type Failure Awards have a de-escalating effect.

Additional analyses reveal the drivers of the distinct effects of innovation-type versus discontinuation-type Failure Awards on EoC. Notably, psychological safety is the key driver of Failure Award effectiveness. Psychological safety builds the feeling of being safe to admit mistakes, which reduces EoC for both types. However, if *innovation-type* Failure Awards are granted, the feeling of being safe to experiment is triggered, which offsets the EoC reducing effect. As this offsetting effect only materializes under innovation-type and not under discontinuation-type Failure Awards, only discontinuation-type Failure Awards reduce EoC.

To the best of our knowledge, this study is the first to examine Failure Awards empirically, thereby contributing to both management accounting practice and theory. First, from a practical perspective, we explore the idea of rewarding failure, which has become increasingly popular in practice (e.g., Google X's "Failure Award", P&G's "Heroic Failure Award" and TATA's "Dare to Try Award" (Morgan, 2015)) but has been neglected in research. Therefore, our study responds to the call of Cronin et al. (2021) for more research on the effect of communicating failure tolerance to employees.

Second, we contribute to the related literature on the effects of an open error management culture (EMC).[4] An EMC is the set of shared beliefs, norms, and common practices on how errors are addressed in an organization (van Dyck et al., 2005). Failure Awards can thus be regarded as a

[4] Some studies also employ the term “error management climate”. As “culture” and “climate” are inherently difficult to differentiate, both concepts are treated interchangeably in this study.

specific instrument of an open EMC, as failure is perceived as an acceptable outcome and an opportunity to learn from in both cases (Fischer et al., 2018; Gold et al., 2014; van Dyck et al., 2005). However, there is an important difference. Failure Awards not only communicate that failure is tolerated but also actively reward failure if a failing project is actively terminated by an employee. This difference might be important, as research on open EMC provides mixed findings on its effectiveness in reducing EoC. Whereas some papers find that a failure-tolerating culture decreases EoC (e.g., Simonson & Staw, 1992), others document an increase therein (e.g., Barton et al., 1989).[5] A potential explanation for these controversial findings is that project termination is not explicitly incentivized in an open EMC. Failure Awards, instead, not only signal failure tolerance but also reward failure if failing projects are terminated by employees. Thus, Failure Awards may effectively decrease EoC.

Third, our findings have important implications for the design of (non-monetary) incentive schemes using Failure Awards. Specifically, we show that for promoting innovations and risk-taking, the type of Failure Award is irrelevant, while it matters for EoC. Our results show that only Failure Awards emphasizing project termination significantly reduce EoC. This is important, as many firms today are using innovation-type Failure Awards and thereby neglect the possible benefits of simultaneously reducing EoC. Some examples are the "Epic Fail Award" by Hill Holiday (Proulx, 2019), the "Heroic Failure Award" by Proctor & Gamble (Anthony, 2020), and the "Lean Forward; Fail Smart Award" (NASA, 2021).

[5] Barton et al. (1989) find that an open EMC increases participants' investments in a failing project. In their experiment, an open EMC was implemented by informing participants that their initial investment decision had demonstrated good judgment even though their project later threatened to fail. One potential explanation for their finding is that participants were more likely to accept failure through a decreased fear of failure and thus held on to failing projects. Failure Awards, instead, explicitly require project termination.

From a theoretical perspective, we also contribute to research on intangible rewards and social recognition. While there is a vast literature on tangible rewards (e.g., Cardinaels et al., 2021; Choi & Presslee, 2023; Heninger et al., 2019; Jeffrey, 2009; Kelly et al., 2017), intangible rewards have received much less attention. Studies on recognition programs providing symbolic rewards find positive effects on performance and effort (e.g., Lourenço, 2016; Wang, 2017) and, under certain circumstances, on creative performance (Huo, 2020). However, these studies focus on the recognition of success (not failure) and usually adopt social-comparison theory to predict that employees strive for a positive self-image; thus, even non-monetary incentives are deemed effective (Tafkov, 2013). Similar research on failure is lacking. Hence, we add a new perspective by not restricting recognition to "best performance" and successful outcomes but instead include the reward of failure.

Moreover, we extend the research on risk-taking. We show that Failure Awards can overcome the prevailing risk aversion of decision-makers. Furthermore, we contribute to the accounting phenomenon in EoC research (Cheng et al., 2003; Mahlendorf, 2015). That is, we identify discontinuation-type Failure Awards as a new and cost-efficient debiasing tool that reduces EoC. Failure Awards require a rather low input of resources compared to other de-escalation strategies, e.g., hiring a third-party expert (Behrens & Ernst, 2014). Finally, we shed light on the psychological mechanism that reduces the fear of failure through psychological safety (Frazier et al., 2017). We show that the feeling of being safe to admit failure encourages risk-taking and reduces EoC. However, we also show that the effect of feeling safe to experiment, which is exclusively triggered by the innovation-type Failure Award, offsets this EoC-reducing effect of psychological safety.

II. Background and Hypothesis Development

Failure Awards and Psychological Safety

In this section, we define several constructs that are important for our theory. First, it is important to understand failure and its implications for employees. We define failure as a negative performance outcome due to a lack of success, "bad luck" or the inability to achieve a desired goal that causes employees to feel at least partially responsible for it (Cronin et al., 2021). Feeling responsible for failure results in the "fear of failure", i.e., the "[…] disposition to avoid failure and/or the capacity for experiencing shame and humiliation as a consequence of failure" (Atkinson, 1957). This fear materializes because organizations typically strive for high performance by installing management processes based on predictability and efficiency, leaving little to no room for failure (Birkinshaw & Haas, 2016a; van Dyck et al., 2005). In addition, firms often link a decision-maker's salary (e.g., bonuses) and reputation to error-free decisions and successful outcomes.

To counteract the fear of failure, firms have started granting Failure Awards (Johnson, 2017; Kuvalekar & Ravi, 2019), rewarding them to employees who have shown their willingness to innovate and take risks but have failed. Failure Awards are often granted during award ceremonies that express a company's appreciation and are associated with no or a merely symbolic financial reward.

Failure Awards are thus intended to fulfill two goals at once: (1) encouraging innovation by making it safe to take risks and (2) saving resources by making it safe to admit failure and abandon failing projects (Johnson, 2017; Leber, 2016; Morgan, 2015). Firms use different types of Failure Awards to emphasize one goal more than the other. For instance, NASA, America's civil space program, describes its "L*ean Forward; Fail Smart Award"* as "[…] an award designed to encourage, recognize, and celebrate the spirit that propels individuals to take the risk to innovate,

unfortunately failing to reach the desired outcome […]" (NASA, 2021). Thus, NASA uses an *innovation-type* Failure Award that emphasizes risk-taking. Notably, to receive this award, properly handling the failure (e.g., the deliberate decision to terminate a failing project) is also required. In contrast, Coca-Cola's *Innovation Award* stresses the importance of "killing zombies", i.e., killing products or projects that do not work (Clifford, 2019). While the original project idea must be innovative, Coca-Cola highlights the goal of discontinuing the failing project (*discontinuation-type* Failure Award*)*.

Such practical examples show that firms use specific criteria to award Failure Awards (e.g., Google X (Johnson, 2017)). Based on these examples, we derive the following general criteria: Employees are eligible to receive a Failure Award if they (a) took the risk of initiating an innovative project but (b) the project failed, and thus (c) the employee deliberately terminated the failing project in a timely manner. While these three criteria must be met for innovation- *and* discontinuation-type Failure Awards, the examples cited above show that some firms put more emphasis on the innovation criterion while others stress the discontinuation requirement. In any case, their employees do not qualify for a Failure Award without a deliberate and timely termination in case of project failure.

Moreover, Failure Awards induce psychological safety (Baer & Frese, 2003; Cannon & Edmondson, 2005; Edmondson & Lei, 2014; James et al., 1977). In a psychologically safe environment, individuals feel safe to take interpersonal risks, as they do not fear any negative consequences for their status or career (Edmondson, 1999; Kahn, 1990). According to Edmondson (2003), this is important, as individuals make decisions by assessing the interpersonal risk (e.g., the risk of being perceived as incompetent) associated with a specific action. Failure Awards are thus a credible signal that failure does not result in adverse consequences to one’s reputation or career. Failure

Awards acknowledge the courage needed to engage in promising but risky endeavors and demonstrate the firm's appreciation. Consequently, employees feel psychologically safe, and their fear of failure is reduced. Hence, psychological safety encourages employees to admit failure. Through this feeling, individuals do not perceive their reputation or career to be at risk if a project fails.

The Effect of Failure Awards on Risk-Taking

In this section, we build on psychological safety to predict that Failure Awards increase risk-taking if either discontinuation-type (H1a) or innovation-type (H1b) Failure Awards are used.[6] Furthermore, we posit a research question on whether the risk-inducing effect of Failure Awards differs between these two types (RQ1).

Motivating risk-taking is important as agency theory assumes that agents (i.e., employees) are risk-averse (Eisenhardt, 1989; Wiseman & Gomez-Mejia, 1998). Individuals are therefore less likely to engage in risk-taking if they perceive their wealth to be at risk (Keil et al., 2000; Sitkin & Weingart, 1995; Wong, 2005). This feeling materializes when employees expect project failure. On the one hand, employees fear direct monetary consequences if their compensation is performance-contingent and a project fails. On the other hand, indirect (monetary and non-monetary) consequences may also occur. While Failure Awards do not compensate for the direct monetary consequences of failure, they reduce the indirect negative consequences. Monetary indirect consequences arise if future career and promotion prospects are harmed in case of failure, while non-monetary consequences result from expected reputation and image loss (Hirshleifer, 1993). Hence, Sitkin and Weingart (1995) find that the degree to which decision-makers engage in risk-taking is

[6] While risk-taking can be easily described as the choice of a risky decision (Barki et al., 1993), defining risk is more complex. However, the various definitions of risk exhibit two similarities: (1) the probability that an undesirable outcome will occur and (2) the consequences thereof (e.g., losses or decreased returns) (Barki et al., 1993; Highhouse & Yüce, 1996; Sitkin & Pablo, 1992). Thus, risk is expressed through the variance of expected decision outcomes.

negatively linked to their level of perceived risk. Psychological safety lowers the level of perceived risk (Palanski & Vogelgesang, 2011) and, thereby, the concerns about the indirect consequences of failure.

To achieve this goal, Failure Awards focus on the end or outcome of an investment (or similar) project and explicitly communicate that any outcome, including failure, is acceptable. By granting a Failure Award, a firm signals that if failure materializes due to high risk, it is acceptable, and thus, individuals feel *safe to admit failure*. Accordingly, the fear of taking risks at the beginning of a project is reduced, and risk-taking is indirectly encouraged. We refer to this mechanism as the **psychological safety factor** (**PS factor**). This mechanism is the same for both Failure Award types, as the construct of the Failure Award, i.e., awarding a failing outcome, decreases the severity of failure in both cases. Hence, we predict that both types of Failure Awards increase risk-taking, which leads to hypotheses H1a and H1b:

H1a: Risk-taking is higher when discontinuation-type Failure Awards are granted than when Failure Awards are not granted.

H1b: Risk-taking is higher when innovation-type Failure Awards are granted than when Failure Awards are not granted.

Instead of focusing on the end of an investment project and communicating that any outcome, including failure, is acceptable, one might focus on the beginning of the project. A firm may want to foster risk-taking by explicitly creating the feeling that employees are *safe to take risks and experiment*. We refer to this mechanism as the **safety to experiment factor**. The safety to experiment factor is exclusively triggered by the innovation-type Failure Award because this type directly encourages individuals to experiment and innovate. The question thus arises whether this additional effect leads to more risk-taking under innovation-type Failure Awards. This is only the case if the

effect of the PS factor and the safety to experiment factor are additive. One reason why both effects might not be additive is that the utmost a firm can do to increase risk-taking is to communicate that all consequences of taking risks, including failure, are acceptable. This might bear more weight than simply emphasizing risk-taking. Consequently, we posit the following research question:

RQ1: Is risk-taking higher when innovation-type Failure Awards are granted than when discontinuation-type Failure Awards are granted?

The Effect of Failure Awards on Escalation of Commitment

After selecting and initiating a project, managers often remain engaged even if the project is failing. Hence, we next discuss how Failure Awards affect EoC. While we derive a directional prediction for discontinuation-type Failure Awards, we pose a research question for innovation-based Failure Awards.

Staw and Ross (1987) identify project, psychological, social and structural drivers of EoC. As we explain below, Failure Awards affect EoC through psychological and social drivers. The psychological determinants can be explained using self-justification theory (Festinger, 1957; Sleesman et al., 2012). According to this theory, decision-makers feel the need to justify their initial decision to start a project if it performs poorly (Brockner, 1992; Sleesman et al., 2012). The sunk cost fallacy may even facilitate self-justification pressures, as decision-makers do not want to be perceived as resource wasters (Arkes & Blumer, 1985).[7] Hence, they escalate their commitment to avoid psychological costs in case of (project) failure. The social determinants of EoC imply that others, such as evaluators or rivals, indirectly affect decision-makers (Sleesman et al., 2012; Staw & Ross, 1989). According to self-presentation theory (Goffman, 1959), people aim to manage the impressions others have of them. Therefore, they are reluctant to engage in behaviors that could

[7] Sunk costs are one of several drivers of EoC. We elaborate more on sunk costs in the additional analysis.

threaten their image, e.g., admitting a failure by withdrawing from their initial course of action (Edmondson, 2003; Sleesman et al., 2012). Thus, decision-makers stay committed to their initial decision.

Failure Awards induce psychological safety by signaling that project failure does not indicate poor performance of the decision-maker. Hence, Failure Awards reduce the pressure to justify why a failing project was initiated (self-justification pressure) and mitigate concerns of being perceived as incompetent (impression management concerns). Accordingly, employees do not fear any negative consequences for their image or career if they admit failure and terminate a project.

This line of thought is supported by Simonson and Staw (1992), who find that self-justification pressure can be decreased by informing participants that their previous decisions resulting in negative outcomes are not an indicator of their intelligence. Similarly, Heng et al. (2003) show that assuring decision-makers that their superior's opinion about them will not be affected by their project's outcome reduces EoC. Finally, Mahlendorf (2015) demonstrates that organizational allowance for failure reduces managers' perceived threat of project failure, which reduces EoC. Thus, psychological safety (PS factor) reduces decision-makers' reluctance to terminate a failing project, and EoC is reduced.

While this allows a clear prediction of an EoC-reducing effect of discontinuation-type Failure Awards, the effect of innovation-type Failure Awards remains less clear. As discussed for RQ1, innovation-type Failure Awards trigger not only the PS factor but also the safety to experiment factor. While both effects, the PS factor and safety to experiment factor, work in the same direction for risk-taking, they work in opposite directions for EoC. Decision-makers who feel safe to experiment might be encouraged to stay committed to a failing project, as they do not expect any negative consequences in case of project failure. Thus, they might bet on the small chance to turn the failing

project profitable by project continuation. For innovation-type Failure Awards, it is therefore questionable whether the de-escalating effect of psychological safety (PS factor) is offset by the risk-encouraging effect of feeling safe to experiment (safety to experiment factor). Consequently, we posit a directional hypothesis for discontinuation-type Failure Awards and a research question for innovation-type Failure Awards:

H2: Escalation of commitment is lower when discontinuation-type Failure Awards are granted than when Failure Awards are not granted.

RQ2: Do innovation-type Failure Awards reduce escalation of commitment?

III. Research Design

Experimental Design and Procedure

To test our predictions and answer our research questions, we employ a 2×1+1 between-subjects experimental design. We manipulate the type of Failure Award on two levels, *innovation-type* and *discontinuation-type* Failure Award. Furthermore, a Failure Award absent treatment (control group) is employed in which Failure Awards are not provided. The experiment was programmed using oTree (Chen et al., 2016) and conducted online on Amazon Mechanical Turk (MTurk) due to the COVID-19 pandemic and social distancing restrictions.

Figure 1 depicts the experimental procedure. Before working on the main tasks where we measured risk-taking (risk task) and escalation of commitment (EoC task), participants had to pass an eligibility check designed for MTurk workers and participated in a lottery task to measure ex-ante risk preferences. At the end of the experiment, participants learned their compensation and responded to a post-experimental questionnaire (PEQ).

During the eligibility check, participants had to demonstrate their knowledge of the expected value calculation that was required for the main task. Only participants who successfully calculated

the expected value of a prize wheel could proceed. Next, participants completed the lottery task to measure their ex-ante risk preferences. Similar to Sprinkle et al. (2008), 15 scenarios were presented. Each scenario consisted of a safe payment of $0.75 and a lottery that pays either $1.50 with a probability of p or $0 with a probability of (1-p). The probability p decreases from 85% (scenario 1) to 15% (scenario 15) in 5% increments. Participants indicated in which scenario they would like to switch from the lottery to the safe payment or if they always want to participate in the lottery. A random mechanism in the experiment chose one of the 15 scenarios and determined whether participants received an additional compensation of $1.50, $0.75 or $0, depending on the participant's lottery choice.

[Insert Figure 1 about here]

Participants then learned that they would act as project managers at the fictitious company "CleverClean", and the main tasks were described. During the main task, participants needed to decide in which of two projects to invest (risk task) and whether to continue investing when failure became imminent (EoC task). Participants knew that in addition to the payment from the lottery task and a fixed payment ($1.00), they could earn a performance-contingent payment that depended on their decisions during the main task. Compensation and other financial information was provided in lira (the experimental currency).[8] The performance-contingent compensation was 1% of the project account balance, managed by the participants. At the beginning of the experiment, the project account was credited with 5 m lira. Investments reduced this amount, and proceeds from investments increased it.

[8] At the end of the experiment, all lira earned by participants were converted into dollars at a rate of 20,000 lira per dollar.

Next, the manipulation (presence and type of Failure Award) was described, and participants had to pass a quiz to verify their understanding of the task, the compensation, and the manipulation.

Failure Award Manipulation

Participants in the Failure Award treatments learned that CleverClean's management had introduced Failure Awards, read an example of a recent award winner, and watched a video showing an excerpt from the award ceremony. In practice, there is no single name for "Failure Awards", but firms use various (unique) names (e.g., Epic Fail Award, Dare to Try Award, Heroic Failure Award, etc.). While we employ the term Failure Award in this paper, the experimental materials referred to the award as "Courage Award", which gives us the opportunity to define "courage" differently depending on the two Failure Award treatments (Figure 2).[9]

Participants in the innovation-type treatment were told that managers often shy away from "taking risks and being innovative" when facing difficult decisions. Therefore, CleverClean has started granting Failure Awards to managers who do not shy away but have the courage to "take the risk to start a highly innovative project". In the discontinuation-type treatment, participants were told that managers shy away from "'pulling the plug' of a failing project". Thus, Failure Awards are granted to managers who do not shy away but "'pull the plug' and stop wasting resources by terminating a failing project". We modeled our Failure Award types after practical examples (e.g., Google X) (Leber, 2016).[10] Importantly, the criteria to receive a Failure Award were

[9] A pretest revealed that the name "Failure Award" was perceived by some as undesirable due to the negative connotation of "failure". This concern typically does not arise in practice. For example, as the CIO of Hill Holliday who grants the Epic Fail Award states, "[d]espite its awful-sounding name, this award has become something that Hill Holliday employees strive to win." (Proulx, 2019). In an experimental setting, the possibilities of convincingly presenting the Failure Award to mitigate these concerns are—compared to a real firm setting—very limited. Accordingly, the experimental materials use the term "Courage Award".

[10] To differentiate the provided Failure Award type manipulation from a goal-setting manipulation (Kachelmeier et al., 2016), all treatments receive information indicating that the companies' goals are to engage in innovations through risk-taking and to reduce resource wastage in failing projects. Consequently, the Failure Award types serve

kept constant across the two Failure Award conditions. Participants receive a Failure Award only if they a) start a risky project and b) deliberately terminate the project as soon as c) failure becomes imminent.

[Insert Figure 2 about here]

Practical examples show that Failure Awards have a symbolic meaning and are often non-monetary (e.g., trophies, applause, award ceremonies) or have only a symbolic cash component (e.g., Google X) (Johnson, 2017; Stewart, 2015). Thus, participants in the Failure Award conditions learned that in addition to an award ceremony, award winners receive the symbolic amount of 2,000 lira, which equals $0.10 (approx. 2% of the average total compensation).

Risk Task

The risk task is similar to the choice problems from Kahneman and Tversky (1979). Participants had to choose between investing in project A (i.e., Smart Vacuum Robot) or B (i.e., Smart Mop Robot). While both projects were risky, project B was associated with higher risk, i.e., greater variance in expected cash flows, and a higher expected value compared with project A. The experimental materials informed participants that the company preferred projects with higher expected returns.[11] Thus, the riskier project, i.e., project B, was economically preferred compared to the safer project A.

Participants were provided with a brief description of the two projects, cash flow forecasts for a best-case and a worst-case scenario, and investment ratings. Figure 3 shows the experimental materials for project A, i.e., the Smart Vacuum Robot, and Figure 4 shows those for project B, i.e.,

as a supplementary control mechanism that provides a cue suggesting the appropriate behavior by additionally rewarding this behavior (Kachelmeier et al., 2016).

[11] This is also in line with expected utility theory, which suggests that (risk-neutral) individuals should make decisions based on expected returns and therefore always choose the option with higher expected returns independent of the inherent risk (i.e., variance) (Kahneman & Tversky, 1979; Schoemaker, 1982).

the Smart Mop Robot. While the capital requirement for both projects was identical (3 m lira), the probabilities of the two scenarios and the expected cash inflows differed between the two projects. Participants were made aware that all financials were predicted values reflecting only the information available at that stage of the experiment. Participants could easily calculate that project B, i.e., the economically preferred project, was expected to yield a return (expected cash inflows less investment) of 4 m lira and a variance of 49 m. Project A, instead, promised a lower expected return of 3.5 m lira and a lower variance of 2.25 m. The obvious difference in variance allows a strong test of our theory.

Participant compensation was 1% of the final "project's account balance". This account was credited with 5 m lira at the start of the experiment. During the experiment, cash outflows decreased and cash inflows increased the account balance. Selecting the economically preferred project B yielded an expected balance of 9 m lira (i.e., initial project account balance (5 m) + expected project return (4 m)). Project A promised 8.5 m lira (i.e., initial project account balance (5 m) + expected project return (3.5 m)). To summarize the financial information, a "star" rating was provided that visualized that project B implied more risk compared to A but offered higher expected returns. As firms in the real world provide Failure Awards not for every kind of failure but only if a project entailed a substantial amount of risk, participants were informed that only the riskier project (B) qualified for the Failure Award. We measure risk-taking—our first dependent variable—based on the project participants decided to invest in. Being involved in the investment decision increases personal responsibility, facilitating EoC (Denison, 2009; Schoorman & Holahan, 1996), which we discuss below.

[Insert Figures 3 and 4 about here]

Escalation of Commitment Task

After making the investment decision, participants were informed that 12 months had passed and that they would now receive an update about the selected project.[12] To induce an EoC setting, decision-makers must receive negative feedback on their initial decision and decide whether to keep investing in the failing project (Wong et al., 2006). For example, Seybert (2010), Brink et al. (2020), and Denison (2009) inform participants about a decline in expected cash flows of an investment project. Similarly, we informed participants that the project development was below expectations (e.g., lower expected sales due to a new competitor) and that an additional investment of 1 m lira was required to continue the project. The updated predicted financials indicated that the expected return if project B is continued would be 0.32 m lira instead of the initially expected 4 m lira. As participants' performance-based compensation is 1% of the final project account, they could expect to earn 53,200 lira (i.e., 1% × [initial project account balance (5 m lira) + expected return (0.32 m lira)]) when continuing project B, compared to initially 90,000 (i.e., 1% × [initial project account balance (5 m lira) + expected return (4 m lira)]).

Alternatively, participants could terminate the project and invest the 1 m lira in an alternative project that promised an even higher expected return (Brink et al., 2020; Seybert, 2010). If participants decided on this option, they could expect a performance-contingent compensation of 60,000 lira, which exceeds the expected compensation of 53,200 lira when investing in the failing project. Thus, terminating the failing project and investing in the alternative investment project was the economically preferred option.

[12] To measure the effect of Failure Awards on EoC, we are only interested in participants selecting the riskier project. This is because taking on a substantial amount of risk is a prerequisite to receiving a Failure Award. However, due to potential fairness concerns of MTurk workers, we also let the participants who invested in the safer project continue the experiment and paid them accordingly. For simplicity, we only describe the financial scenarios faced by the participants who invested in the riskier project during the EoC task in this section.

Participants in the two Failure Award conditions were reminded that they would (definitely) receive a Failure Award of 2,000 lira if they decided to invest in the alternative project. The 2,000 lira award is included in the amount of 60,000 lira from above, i.e., the expected compensation when investing in the alternative project (i.e., 1% × [initial project account balance (5 m lira) + expected project value (0.8 m lira)] + Failure Award (2,000 lira)).

Participants in the Failure Award absent condition naturally received no Failure Award if they decided to terminate the failing project and invest in the alternative project. To hold all treatments economically equivalent and to rule out that the compensation associated with the Failure Award drives our effects, the expected cash inflow of the alternative project was higher (5 m instead of 4.8 m lira) to compensate for the lack of Failure Award.[13] This resulted in an identical expected compensation in the Failure Award absent condition (i.e., 1% × [initial project account balance (5 m lira) + expected project value (1 m lira)]). Table 1 summarizes participants' expected compensation dependent on their continuation decision and the treatment.

[Insert Table 1 about here]

To measure EoC, i.e., our second dependent variable, participants had to recommend to the management on a scale from 0 to 100 whether to continue the failing project or to invest in the alternative investment opportunity (0% = definitely terminate, 100% = definitely continue) (Keil et al., 2000; Wong, 2005). To create impression management concerns and self-justification pressure, participants were told that their decisions would be reviewed and that they might receive

[13] To rule out the role of the symbolic compensation associated with the Failure Award in our effects, we also included the following item in the post-experimental questionnaire: "The monetary compensation of $0.10 (2,000 lira) from the Failure Award was important to me." On average, participants responded 2.8 on a Likert scale ranging from 1 (not important) to 7 (highly important). As 2.8 is significantly below the scale's midpoint ($p < 0.01$), we thus conclude that it is not the compensation that drives our effects.

written feedback. Approximately 5% of the participants were randomly selected and received a message through MTurk with feedback on the rationality of their decisions.

While such a recommendation decision allows a fine measurement of EoC, a binary decision is required to decide whether the termination criterion of the Failure Award is met. Thus, participants were asked whether to continue or terminate the failing project. Participants knew that if they decided to continue, they would need to make another decision in 12 months. If participants decided to terminate their project, the task ended. Otherwise, they entered a second round. We included this second round, as Brockner (1992, p. 40) argues that "[…] escalation situations include repeated (rather than one-shot) decision-making in the face of negative feedback […]". Participants could delay the termination decision in the first EoC round and justify this by relying on the (small) chance to turn the project profitable and if not to end it if it continues to fail. The second EoC round was almost identical to the first round, but outcome probabilities worsened again (Behrens & Ernst, 2014) and the Failure Award was granted only with a 50% probability.[14]

For our tests, we rely only on the first (fine) EoC measurement, as project termination is the economically preferred decision at this point. Our main results are inferentially identical if we use the binary EoC measure. In the additional analyses, we discuss participants who decided to terminate the project in the second instead of the first round.

Participants

Participants were recruited from Amazon MTurk through a publicly advertised human intelligence task (HIT). The primary reason for using MTurk is that the COVID-19 pandemic did not allow a laboratory experiment. MTurk offers an easily accessible and cost-efficient platform (Bra-

[14] This reduced likelihood is implemented because a delayed project termination contradicts the objective of a Failure Award.

sel et al., 2016; Paolacci et al., 2010) that provides reliable data, especially due to its diverse participant pool (Buhrmester et al., 2011; Hunt & Scheetz, 2019). Moreover, MTurk workers are more representative of the U.S. population in terms of demographics, behavioral patterns, and risk preference attributes than undergraduate students (Buhrmester et al., 2011; Farrell et al., 2017; Goodman et al., 2013). This allows greater generalizability of the study's results. Furthermore, MTurk workers demonstrate a similar susceptibility to cognitive biases to that of participants in laboratory experiments.

Based on Bentley's (2021) four sources of noise in MTurk research, we took precautionary steps by prescreening the population. Hence, workers were eligible to participate in the study only if they had a historical HIT approval rating of 95% or higher, completed at least 500 HITs, and were based in the U.S. (Peer et al., 2014). Several questions, including two attention check questions based on Peer et al. (2017) and Liu et al. (2020), were included to ensure that participants understood the experiment and were attentive throughout the PEQ. Furthermore, using mobile devices for the task was prohibited to minimize possible distractions. Last, if participants spent less than the bare minimum of required time on a page based on minimal page times collected during the pretest, they could not proceed with the experiment (Hunt & Scheetz, 2019).

In total, 277 persons participated in the study. Of these, 13 participants had to be excluded because they failed at least one attention check. The remaining sample is therefore 264 participants. The participants' average age was 40.3 years, 37.12% were female, and approx. 84% had a bachelor's degree or higher. Furthermore, 215 (81%) participants had six years or more of work experience. Based on the ex-ante risk-elicitation task, we found that 63.64% of the participants were risk-averse, 16.67% were risk-neutral, and 19.70% were risk-seeking. This is in line with previous research that finds a preference for risk aversion among individuals (Crosetto & Filippin, 2013;

Kreilkamp et al., 2021). Finally, there are no significant differences across conditions for age, gender, risk preferences, working experience, educational degree, prior knowledge of biases, or Failure Awards (all p-values > 0.21).[15] Hence, randomization was successful.

At the end of the experiment, participants learned their compensation. For participants who continued the project, a random mechanism determined whether the best-case scenario or the worst-case scenario of the project materialized. On average, participants receive a total compensation of $4.36 for completing the study in approx. 31 minutes. The compensation was above the average MTurk reservation wage of $1.38 per hour (Horton & Chilton, 2010).

IV. Results

Comprehension and Other Checks

Before testing our hypotheses, we verified the participants' correct understanding of the task. To create a valid EoC setting, participants needed to comprehend that their initially chosen project was failing. Thus, we asked participants in the post-experimental questionnaire on a 7-point Likert scale to what extent they agree with the following statement: "According to CleverClean, continuing the project meant to invest more money in a failing project" (1 = totally disagree, 7 = totally agree). The mean value is significantly above the scale midpoint ($p < 0.01$). Hence, subjects understood that their project was failing. Furthermore, we check whether Failure Awards created a culture in which participants perceived that failure was tolerated (i.e., open EMC). On a 7-point Likert scale, we find that subjects in the Failure Award treatments agreed more with the statement "I feel that at CleverClean, failures are tolerated and not punished" than those in the Failure Award absent treatment ($t = -8.17$, $p < 0.01$). Hence, Failure Awards created an open EMC. Moreover, we

[15] All p-values are reported as two-tailed unless stated otherwise.

check whether participants correctly identified the risker project. Participants indicated which project they believe to be riskier on a 7-point scale (1 = Smart Vacuum Robot, 7 = Smart Mop Robot). With a mean value of at least 6.36, participants correctly identified the Smart Mop Robot as the riskier project in all treatments.[16] Last, participants in both Failure Award conditions correctly selected on their first try the three conditions required to qualify for a Failure Award (i.e., starting a risky project, project failure, and project termination). Hence, participants in both treatment groups knew equally well the criteria to receive a Failure Award.

Descriptive Results and Hypotheses Tests

Table 2, Panel A and Figure 5, Panel A illustrate the descriptive statistics for risk-taking. Risk-taking means the percentage of participants in a treatment that decided to invest in the riskier project. H1a predicts that risk-taking is higher when discontinuation-type Failure Awards are granted than when Failure Awards are not granted. Consistent with H1a, more participants invested in the riskier project when discontinuation-type Failure Awards were present (74%) rather than absent (47%).

[Insert Table 2 and Figure 5 about here]

An analysis of variance (ANOVA) shows that risk-taking significantly differs among the three treatments (Table 3, Panel A, $F = 10.18$, $p < 0.01$). For the formal test of H1a, we apply pairwise comparisons. The results in Table 3, Panel B show that participants in the discontinuation-type treatment are more likely to invest in the riskier project than participants in the Failure Award absent treatment ($t = 3.83$, $p < 0.01$).[17] Hence, H1a is supported.

[16] Excluding the 11 subjects who indicated a value of 4 or less leads to inferentially identical results.

[17] To estimate treatment effects on binary outcomes, applying linear OLS regression models is generally more appropriate than using logit models (Gomila, 2021). Taking the discontinuation-type as the baseline in a linear regression model (untabulated), risk-taking in the discontinuation treatment significantly differs from the Failure Award absent treatment ($t = 3.83$, $p < 0.01$) but does not differ from the innovation-type treatment ($t = -0.11$, $p = 0.910$). Alternative logit regressions confirm these results ($z = 3.53$, $p < 0.01$; $z = -0.12$, $p = 0.905$).

H1b predicts that risk-taking is higher when innovation-type Failure Awards are granted than when Failure Awards are not granted. In line with H1b, the descriptive results show that risk-taking is higher when innovation-type Failure Awards are present (73%) than when Failure Awards are absent (47%). The pairwise comparisons in Table 3, Panel B show that risk-taking is significantly higher in the innovation-type Failure Award condition ($t = 3.78$, $p < 0.01$). Thus, H1b is supported.

The first research question (RQ1) investigates whether risk-taking is higher for innovation-type Failure Awards than for discontinuation-type Failure Awards. The descriptive results show that risk-taking under innovation-type Failure Awards (73%) and discontinuation-type Failure Awards (74%) is almost identical. The difference is not statistically significant ($t = 0.11$, $p = 0.91$). We refer to this finding in the additional analyses section.

[Insert Table 3 about here]

Next, we focus on EoC. Only participants who selected the riskier project could receive a Failure Award. Thus, we use only these participants when we examine the effect of Failure Awards on EoC. Thus, the sample size decreased from 264 to 165 participants. Figure 5, Panel B illustrates the results.

H2 predicts that EoC is lower when discontinuation-type Failure Awards are granted than when Failure Awards are not granted. The descriptive results in Table 2, Panel B show that the likelihood of project continuation is lower when discontinuation-type Failure Awards are granted (43.96%) than when Failure Awards are absent (62.68%). This is consistent with H2. The ANOVA results in Table 4, Panel A show that EoC significantly differs across all three treatment groups ($F = 3.16$, $p = 0.045$). To formally test H2, we use pairwise comparisons (Table 4, Panel B). Our results show that EoC is significantly lower in the discontinuation-type Failure Award treatment compared to the Failure Award absent treatment ($t = -2.51$, $p = 0.013$). Hence, H2 is supported.

The research question RQ2 examines whether EoC is lower in the innovation-type Failure Award treatment (53.24%) versus the Failure Award absent condition (62.68%). Even though descriptive results suppose a reducing effect, pairwise comparisons reveal that the difference is not statistically significant (Table 4, Panel B, $t = -1.28$, $p = 0.201$). We discuss this finding in the additional analyses section.

[Insert Table 4 about here]

Additional Analyses

This subsection provides further analyses and explores questions from the post-experimental questionnaire to further test the theory that underlies our hypotheses. First, we focus on psychological safety (PS factor) and the safety to experiment factor, which are core to our theory. Next, we examine whether Failure Awards mitigate the sunk cost fallacy, i.e., an important driver of EoC. Finally, we examine EoC behavior in the second EoC round.

Factor Analysis of Psychological Safety and Safety to Experiment

In our theory, we argue that Failure Awards increase psychological safety. We explain that in addition to psychological safety, the feeling of being safe to experiment may also be triggered. First, we predict that Failure Awards—irrespective of type—increase the feeling of being safe to admit failure (PS factor). Second, we argue that innovation-type Failure Awards (additionally) trigger the feeling of being safe to experiment and take risks (safety to experiment factor). We use questions from the post-experimental questionnaire and apply principal component analysis to extract factors based on these two items, i.e., participants' perception of *feeling safe to admit failures* (PS factor, Table 5, Panel A) and their perception of *feeling safe to take risks and experiment* (safety to experiment factor, Table 5, Panel B).

[Insert Table 5 about here]

The PS factor (safety to experiment factor) has an eigenvalue of 2.11 (1.88) and a Kaiser–Meyer–Olkin (KMO) measure of 0.62 (0.502).[18] Using pairwise comparisons (Table 6, Panel A), we find that participants feel significantly safer to admit failure (PS factor) when Failure Awards are present rather than absent ($t = 6.26$, $p < 0.01$). We find this effect for both Failure Award types (innovation-type: $t = -6.03$, $p < 0.01$ and discontinuation-type: $t = -4.51$, $p < 0.01$).[19] As expected, we do not find a significant difference for the PS factor between the two Failure Award types ($t = -1.33$, $p = 0.186$). These findings therefore support our theory that Failure Awards—irrespective of their type—induce psychological safety, making individuals feel safe to admit failure.

For the safety to experiment factor (Table 6, Panel B), we find that participants in the innovation-type treatment feel significantly safer to take risks and experiment compared to participants in the Failure Award absent condition ($t = -2.06$, $p = 0.041$) and compared to the discontinuation-type condition ($t = -1.71$, $p = 0.089$). We do not find that participants in the discontinuation-type treatment feel significantly safer to take risks compared to the Failure Award absent treatment ($t = -0.20$, $p = 0.839$). Hence, in line with our prediction, the effect of feeling safe to take risks and experiment is only triggered in the innovation-type treatment. These findings explain why we find an EoC-reducing effect for the discontinuation-type Failure Award (H2) but not for the innovation-type Failure Award (RQ2).

For RQ1, we do not find that the PS factor and the safety to experiment factor are additive, resulting in a statistically insignificant difference in risk-taking between the two Failure Award types (Table 3, Panel B). To further explore this finding, we extract a third factor that—in contrast to the safety to experiment factor—is based on items measuring risk perception (i.e., participants'

[18] A minimum KMO value of 0.5 is necessary for reliable factor estimation (Kaiser, 1970).

[19] These and the following results for the PEQ items are based on the full sample (n = 264), as all participants were exposed to the Failure Award manipulation before selecting the investment project.

perception of feeling safe to take risks) *immediately after* participants made their initial project investment decision.[20] This allows us to examine how participants perceived their environment at the time risk-taking was measured. This third factor has an eigenvalue of 1.81 and an overall KMO of 0.57 (Table 7). Contrary to the safety to experiment factor, we do not find a significant difference in risk perception between the two Failure Award types ($t = -0.05$, $p = 0.964$, untabulated). Thus, at the beginning (but not at the end) of the experiment, the discontinuation-type Failure Award has a similar effect on participants' risk perception compared to the innovation-type Failure Award. This supports our argument that by communicating that all consequences of risk-taking, particularly failure, are acceptable, the firm does the utmost to increase risk-taking. However, any additional emphasis on risk-taking through the innovation type does not yield an extra effect.

Overall, consistent with our predictions, we find that the feeling of being safe to admit failures (PS factor) is positively linked to risk-taking ($t = 3.80$, $p < 0.01$, untabulated) and negatively related to EoC ($t = -2.36$, $p = 0.019$, untabulated). In contrast, the feeling of being safe to experiment and take risks (safety to experiment factor) is positively linked to EoC ($t = 10.65$, $p < 0.01$, untabulated).

[Insert Table 6 and 7 about here]

Sunk Costs and Escalation of Commitment

Brockner et al. (1981) show that sunk costs may influence escalation behavior. We use the following item from Brockner et al. (1981) to measure the relevance of sunk costs: *"I had already invested so much that it seemed silly… 1 = to spend another penny to 7 = not to invest a little more"*. Higher values indicate an increased sensitivity to the sunk cost effect.

[20] In contrast, the safety to experiment factor was measured after the EoC task in the PEQ at the end of the experiment.

The mean value for the Failure Award present treatments is 3.33 and 4.09 for the Failure Award absent treatment. The difference is statistically significant ($t = -3.35$, $p < 0.01$). It indicates that Failure Awards decrease participants' sensitivity to sunk costs. Furthermore, we find that sensitivity to sunk costs significantly increases the likelihood of project continuation ($t = 9.56$, $p < 0.01$). The presence of Failure Awards decreases participants' sensitivity to sunk costs since timely termination is supported by the organization, which decreases the perceived need to explain why organizational resources were wasted (Arkes & Blumer, 1985; Sleesman et al., 2012). Thus, Failure Awards indirectly decrease escalation tendencies by reducing decision-makers' sensitivity to sunk costs.

The Impact of Failure Awards on Delayed Project Termination

Failure Awards may induce the feeling of being safe to take risks and experiment (safety to experiment factor), which could lead to a delayed termination decision instead of immediate termination. Hence, our experimental design incorporates a second decision round in which participants again receive a project update indicating a lower expected return after they decide to continue the already poorly performing project.

ANOVA results show no difference among the three treatments concerning delayed EoC ($F = 0.540$, $p = 0.727$, untabulated). Using pairwise comparisons, none of the three comparisons significantly differ between the treatment pairs (all p-values > 0.43, untabulated). Hence, discontinuation-type Failure Awards immediately decrease escalation tendencies (H2), but they do not decrease discontinuation tendencies when decision-makers delay their discontinuation decision ($t = -0.28$, $p = 0.779$, untabulated).

V. Conclusion

Employees' "fear of failure" may harm firm profitability. On the one hand, it increases employees' reluctance to take sufficient risks, e.g., when starting innovative but risky projects. On the other hand, it leads to escalation of commitment, i.e., the tendency to overinvest in failing projects (Staw, 1976). To counteract these issues, a growing number of firms have started to grant Failure Awards, rewarding employees who started risky but economically preferred projects that ultimately failed. In this study, we examine the effectiveness of Failure Awards for increasing risk-taking and reducing EoC. We investigate two types of Failure Awards, those that emphasize innovation and risk-taking (innovation-type Failure Awards) and those that concern the early termination of failing projects (discontinuation-type Failure Awards).

We have conducted an online experiment on MTurk in which participants first decided whether to invest in a riskier but economically preferred project or a safer project (our proxy for risk-taking). Next, they had to determine whether to terminate or continue the project when failure became imminent (our proxy for EoC).

We provide evidence that both the presence of Failure Awards and their type affect risk-taking and EoC. Specifically, we find that risk-taking is encouraged through both types of the Failure Award. Furthermore, we find that discontinuation-type Failure Awards decrease EoC. However, we do not find this de-escalating effect for innovation-type Failure Awards.

Moreover, we have predicted and shown that Failure Awards induce psychological safety, which mitigates the fear of failure. Psychological safety creates a feeling of being safe to admit failure. However, through a Failure Award, decision-makers may also feel safe to experiment and take risks. The latter effect is exclusively triggered by innovation-type Failure Awards. Whereas risk-taking is encouraged through psychological safety but not further affected by the feeling of

being safe to experiment, the effects on EoC are opposing. Thus, when feeling safe to experiment and take risks, individuals with an innovation-type Failure Award take the risk of further investing in a failing project, which reduces the de-escalating effect of the Failure Award.

Accordingly, our findings have important implications for the design of management control systems. First, they illustrate that Failure Awards encourage risk-taking, independent of their type. Second, we show that discontinuation-type Failure Awards can be used as a cost-efficient way to reduce EoC. Our results imply that it is crucial for firms to pay close attention to the specific aspects Failure Awards highlight. A focus on innovation and risk-taking, predominantly found in practice (e.g., "Epic Fail Award" by Hill Holiday (Proulx, 2019), "Heroic Failure Award" by Proctor & Gamble (Anthony, 2020) or "Lean Forward; Fail Smart Award" by NASA (NASA, 2021)), does not reduce EoC. Third, we provide evidence that psychological safety is the driving factor of the effect of Failure Awards on risk-taking and escalation behavior. Referring to Barton et al. (1989), who do not find a decrease in EoC when employing an open error management climate, discontinuation-type Failure Awards seem to overcome this challenge by incentivizing project discontinuation.

Future research could further explore this field of research. While we associate Failure Awards with a small monetary reward, future research should investigate whether our results hold when completely non-monetary Failure Awards are employed. Even though our design assures that the effectiveness of Failure Awards is not driven by the (symbolic) monetary component, it would be interesting to see whether granting a trophy or applause has stronger effects within a non-online setting, e.g., a laboratory. Additionally, whereas in our setting the early termination of a failing project is rational and thus preferred, one could investigate whether Failure Awards could lead to the irrational early termination of well-performing projects. Moreover, our study focuses on the

two extremes of Failure Award types, which either highlight innovation or discontinuation. Future studies could therefore examine the effects of Failure Awards that highlight both aspects equally. Finally, it could be investigated whether Failure Awards, as a potential de-escalation tool, also combat other biases. Since Failure Awards turn mistakes into "something less negative", an individual's overly optimistic self-assessment, also known as the *overconfidence bias* (Moore & Healy, 2008), might be attenuated.

References

Anthony, S. D. (2020). *Eat, Sleep, Innovate: How to Make Creativity an Everyday Habit Inside Your Organization*. Harvard Business Review Press. https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=6026196

Arkes, H. R., & Blumer, C. (1985). The psychology of sunk cost. *Organizational Behavior and Human Decision Processes*, *35*(1), 124–140. https://doi.org/10.1016/0749-5978(85)90049-4

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review*, *64, Part 1*(6), 359–372. https://doi.org/10.1037/h0043445

Baer, M., & Frese, M. (2003). Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, *24*(1), 45–68. https://doi.org/10.1002/job.179

Barki, H., Rivard, S., & Talbot, J. (1993). Toward an Assessment of Software Development Risk. *Journal of Management Information Systems*, *10*(2), 203–225. http://www.jstor.org/stable/40398061

Barton, S. L., Duchon, D., & Dunegan, K. J. (1989). An Empirical Test of Staw and Ross's Prescriptions for the Management of Escalation of Commitment Behavior in Organizations. *Decision Sciences*, *20*(3), 532–544. https://doi.org/10.1111/j.1540-5915.1989.tb01565.x

Baysinger, B. D., Kosnik, R. D., & Turk, T. A. (1991). Effects of Board and Ownership Structure on Corporate R&D Strategy. *Academy of Management Journal*, *34*(1), 205–214. https://doi.org/10.5465/256308

Behrens, J., & Ernst, H. (2014). What Keeps Managers Away from a Losing Course of Action? Go/Stop Decisions in New Product Development. *Journal of Product Innovation Management*, *31*(2), 361–374. https://doi.org/10.1111/jpim.12100

Bentley, J. W. (2021). Improving the Statistical Power and Reliability of Research Using Amazon Mechanical Turk. *Accounting Horizons*, Article HORIZONS-18-052. Advance online publication. https://doi.org/10.2308/HORIZONS-18-052

Birkinshaw, J., & Haas, M. (2016a). Fail more, fail better. *London Business School Review*, *27*(2), 34–37. https://doi.org/10.1111/2057-1615.12116

Birkinshaw, J., & Haas, M. (2016b). Increase Your Return on Failure. *Harvard Business Review*, 88–93. https://www.qualitycharters.org/wp-content/uploads/2016/05/Increase-Your-Return-on-Failure.pdf

Brasel, K., Doxey, M., Grenier, J. H., & Reffett, A. (2016). Risk Disclosure Preceding Negative Outcomes: The Effects of Reporting Critical Audit Matters on Judgments of Auditor Liability. *The Accounting Review*, *91*(5), 1345–1362. https://doi.org/10.2139/ssrn.2487396

Brassey, J., van Dam, N., & van Witteloostuijn, A. (2019). *Advancing Authentic Confidence through Emotional Flexibility: An evidence-based playbook of insights, practices and tools to shape your future*. LuLu Publishing—Lulu.com.

Brink, A. G., Gouldman, A., Rose, J. M., & Rotaru, K. (2020). Effects of superiors' compensation structures on psychophysiological responses and real earnings management decisions of subordinate managers. *Management Accounting Research*, *48*, 100691. https://doi.org/10.1016/j.mar.2020.100691

Brockner, J. (1992). The Escalation of Commitment to a Failing Course of Action: Toward Theoretical Progress. *The Academy of Management Review*, *17*(1), 39–61. https://doi.org/10.2307/258647

Brockner, J., Rubin, J. Z., & Lang, E. (1981). Face-saving and entrapment. *Journal of Experimental Social Psychology*, *17*(1), 68–79. https://doi.org/10.1016/0022-1031(81)90007-X

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A New Source of Inexpensive, Yet High-Quality, Data? *Perspectives on Psychological Science : A Journal of the Association for Psychological Science*, *6*(1), 3–5. https://doi.org/10.1177/1745691610393980

Cannon, M. D., & Edmondson, A. C. (2005). Failing to Learn and Learning to Fail (Intelligently). *Long Range Planning*, *38*(3), 299–319. https://doi.org/10.1016/j.lrp.2005.04.005

Cardinaels, E., Dierynck, B., & Hu, W. (2021). Rejections, Incentives, and Employee Creativity: When Chocolate Is Better Than Cash. *Working Paper, Tilburg University and Georgia Institute of Technology.* Advance online publication. https://doi.org/10.2139/ssrn.3022001

Chen, D. L., Schonger, M., & Wickens, C. (2016). oTree - An Open-Source Platform for Laboratory, Online, and Field Experiments. *Journal of Behavioral and Experimental Finance*, *9*, 88–97. https://doi.org/10.1016/j.jbef.2015.12.001

Cheng, M. M., Schulz, A. K.-D., Luckett, P. F., & Booth, P. (2003). The Effects of Hurdle Rates on the Level of Escalation of Commitment in Capital Budgeting. *Behavioral Research in Accounting*, *15*(1), 63–85. https://doi.org/10.2308/bria.2003.15.1.63

Choi, J., & Presslee, A. (2023). When and why tangible rewards can motivate greater effort than cash rewards: An analysis of four attribute differences. *Accounting Organizations and Society*, *104*, 101389. https://doi.org/10.1016/j.aos.2022.101389

Clifford, C. (2019, December 2). Coke CEO: Why we have an award for projects that fail. *CNBC*. https://www.cnbc.com/2019/12/02/coke-ceo-quincey-why-coca-cola-co-has-award-for-projects-that-fail.html

Cronin, M., Erkens, D. H., Schloetzer, J. D., & Tinsley, C. H. (2021). How Controlling Failure Perceptions Affects Performance: Evidence from a Field Experiment. *The Accounting Review*, *96*(2), 205–230. https://doi.org/10.2308/TAR-2018-0146

Crosetto, P., & Filippin, A. (2013). The "bomb" risk elicitation task. *Journal of Risk and Uncertainty*, *47*(1), 31–65. https://doi.org/10.1007/s11166-013-9170-z

Denison, C. A. (2009). Real Options and Escalation of Commitment: A Behavioral Analysis of Capital Investment Decisions. *The Accounting Review*, *84*(1), 133–155. https://doi.org/10.2308/accr.2009.84.1.133

Deutschman, A. (2004, December 1). Gore's Text for Innovation: W.L. Gore's new rules of business start with breaking the old rules. *Fast Company,* 2004. https://www.fastcompany.com/51510/gores-text-innovation

Edmondson, A. C. (1999). Psychological safety and learning behavior in teams. *Administrative Science Quarterly*, *44*(2), 350–382. https://doi.org/10.2307/2666999

Edmondson, A. C. (2003). Managing the Risk of Learning: Psychological Safety in Work Teams. In M. A. West, D. Tjosvold, & K. G. Smith (Eds.), *International Handbook of Organizational Teamwork and Cooperative Working* (pp. 255–275). John Wiley & Sons Ltd. https://doi.org/10.1002/9780470696712.ch13

Edmondson, A. C., & Lei, Z. (2014). Psychological Safety: The History, Renaissance, and Future of an Interpersonal Construct. *Annual Review of Organizational Psychology and Organizational Behavior*, *1*(1), 23–43. https://doi.org/10.1146/annurev-orgpsych-031413-091305

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *The Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.2307/258191

Farrell, A. M., Grenier, J. H., & Leiby, J. (2017). Scoundrels or Stars? Theory and Evidence on the Quality of Workers in Online Labor Markets. *The Accounting Review*, *92*(1), 93–114. https://doi.org/10.2308/accr-51447

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford Univ. Press.

Fischer, S., Frese, M., Mertins, J. C., & Hardt-Gawron, J. V. (2018). The Role of Error Management Culture for Firm and Individual Innovativeness. *Applied Psychology*, *67*(3), 428–453. https://doi.org/10.1111/apps.12129

Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological Safety: A Meta-Analytic Review and Extension. *Personnel Psychology*, *70*(1), 113–165. https://doi.org/10.1111/peps.12183

García-Granero, A., Llopis, Ó., Fernández-Mesa, A., & Alegre, J. (2015). Unraveling the link between managerial risk-taking and innovation: The mediating role of a risk-taking climate. *Journal of Business Research*, *68*(5), 1094–1104. https://doi.org/10.1016/j.jbusres.2014.10.012

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. Doubleday anchor books.

Gold, A., Gronewold, U., & Salterio, S. E. (2014). Error Management in Audit Firms: Error Climate, Type, and Originator. *The Accounting Review*, *89*(1), 303–330. https://doi.org/10.2308/accr-50592

Gomila, R. (2021). Logistic or linear? Estimating causal effects of experimental treatments on binary outcomes using regression analysis. *Journal of Experimental Psychology. General*, *150*(4), 700–709. https://doi.org/10.1037/xge0000920

Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data Collection in a Flat World: The Strengths and Weaknesses of Mechanical Turk Samples. *Journal of Behavioral Decision Making*, *26*(3), 213–224. https://doi.org/10.1002/bdm.1753

Grossman, D. (2014, January 24). Secret Google lab 'rewards staff for failure'. *BBC News*. https://www.bbc.com/news/technology-25880738

Heng, C.-S., Tan, B. C., & Wei, K.-K. (2003). De-escalation of commitment in software projects: Who matters? What matters? *Information & Management*, *41*(1), 99–110. https://doi.org/10.1016/S0378-7206(03)00030-2

Heninger, W. G., Smith, S. D., & Wood, D. A. (2019). Reward type and performance: An examination of organizational wellness programs. *Management Accounting Research*, *44*, 1–11. https://doi.org/10.1016/j.mar.2019.02.001

Highhouse, S., & Yüce, P. (1996). Perspectives, Perceptions, and Risk-Taking Behavior. *Organizational Behavior and Human Decision Processes*, *65*(2), 159–167. https://doi.org/10.1006/obhd.1996.0014

Hirshleifer, D. (1993). Managerial Reputation and Corporate Investment Decisions. *Financial Management*, *22*(2), 145. https://doi.org/10.2307/3665866

Hunt, N. C., & Scheetz, A. M. (2019). Using MTurk to Distribute a Survey or Experiment: Methodological Considerations. *Journal of Information Systems*, *33*(1), 43–65. https://doi.org/10.2308/isys-52021

Huo, K. (2020). Performance Incentives, Divergent Thinking Training, and Creative Problem Solving. *Journal of Management Accounting Research*, *32*(1), 159–176. https://doi.org/10.2308/jmar-52479

James, L. R., Hartman, A., Stebbins, M. W., & Jones, A. P. (1977). Relationships between psychological climate and a VIE model for work motivation. *Personnel Psychology*, *30*(2), 229–254. https://doi.org/10.1111/j.1744-6570.1977.tb02091.x

Jeffrey, S. A. (2009). Justifiability and the Motivational Power of Tangible Noncash Incentives. *Human Performance*, *22*(2), 143–155. https://doi.org/10.1080/08959280902743659

Johnson, R. (2017, December 15). Why Google rewards its employees for failing. *LinkedIn*. https://www.linkedin.com/pulse/why-google-rewards-its-employees-failing-ron-johnson/

Kachelmeier, S. J., Thornock, T. A., & Williamson, M. G. (2016). Communicated Values as Informal Controls: Promoting Quality While Undermining Productivity? *Contemporary Accounting Research*, *33*(4), 1411–1434. https://doi.org/10.1111/1911-3846.12147

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692–724. https://doi.org/10.2307/256287

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263. https://doi.org/10.2307/1914185

Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika*, *35*(4), 401–415. https://doi.org/10.1007/BF02291817

Keil, M., Tan, B., Wei, K.-K., Saarinen, T., Tuunainen, V., & Wassenaar, A. (2000). A cross-cultural study on escalation of commitment behavior in software projects. *MIS Quarterly*, *24*(2), 299–325. https://doi.org/10.2307/3250940

Kelly, K., Presslee, A., & Webb, R. A. (2017). The Effects of Tangible Rewards versus Cash Rewards in Consecutive Sales Tournaments: A Field Experiment. *The Accounting Review*, *92*(6), 165–185. https://doi.org/10.2308/accr-51709

Knudsen, M. P., Zedtwitz, M. von, Griffin, A., & Barczak, G. (2023). Best practices in new product development and innovation: Results from PDMA 's 2021 global survey. *Journal of Product Innovation Management*, *40*(3), 257–275. https://doi.org/10.1111/jpim.12663

Kreilkamp, N., Matanovic, S., Sommer, F., & Wöhrmann, A. (2021). The Effect of Compensation Caps on Risk-Taking. *Journal of Management Accounting Research*, *33*(3), 77–95. https://doi.org/10.2308/JMAR-18-053

Kuvalekar, A., & Ravi, N. (2019). When and How to Reward Bad News. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.3281644

Leber, J. (2016, April 14). How Google's Moonshot X Division Helps Its Employees Embrace Failure. *Fast Company*. https://www.fastcompany.com/3058866/how-googles-moonshot-x-division-helps-its-employees-embrace-failure

Liu, Y., Huang, Z., Jiang, L., & Messier, W. F. (2020). Are Investors Warned by Disclosure of Conflicts of Interest? The Moderating Effect of Investment Horizon. *The Accounting Review*, *95*(6), 291–310. https://doi.org/10.2308/tar-2017-0284

Lourenço, S. M. (2016). Monetary Incentives, Feedback, and Recognition—Complements or Substitutes? Evidence from a Field Experiment in a Retail Services Company. *The Accounting Review*, *91*(1), 279–297. https://doi.org/10.2308/accr-51148

Mahlendorf, M. D. (2015). Allowance for failure: reducing dysfunctional behavior by innovating accountability practices. *Journal of Management & Governance*, *19*(3), 655–686. https://doi.org/10.1007/s10997-013-9276-3

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, *115*(2), 502–517. https://doi.org/10.1037/0033-295X.115.2.502

Morgan, J. (2015, March 30). Why Failure Is The Best Competitive Advantage. *Forbes*. https://www.forbes.com/sites/jacobmorgan/2015/03/30/why-failure-is-the-best-competitive-advantage/?sh=3c86f75259df

NASA. (2021). *NASAPeople*. https://nasapeople.nasa.gov/awards/award_criteria.htm

Palanski, M. E., & Vogelgesang, G. R. (2011). Virtuous Creativity: The Effects of Leader Behavioural Integrity on Follower Creative Thinking and Risk Taking. *Canadian Journal of Administrative Sciences / Revue Canadienne Des Sciences De L'administration*, *28*(3), 259–269. https://doi.org/10.1002/cjas.219

Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running Experiments Using Amazon Mechanical Turk. *Judgment and Decision Making*, *5*(5), 411–419. https://doi.org/10.1017/S1930297500002205

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

Peer, E., Vosgerau, J., & Acquisti, A. (2014). Reputation as a sufficient condition for data quality on Amazon Mechanical Turk. *Behavior Research Methods*, *46*(4), 1023–1031. https://doi.org/10.3758/s13428-013-0434-y

Proulx, M. (2019). *Why We Give Out an 'Epic Fail Award' to Employees.* Innovation Leader. https://www.innovationleader.com/employee-engagement/why-we-give-out-an-epic-fail-award-to-employees/1193.article

Roetzel, P. G., Pedell, B., & Groninger, D. (2020). Information load in escalation situations: combustive agent or counteractive measure? *Journal of Business Economics*, *90*(5-6), 757–786. https://doi.org/10.1007/s11573-020-00987-x

Schoemaker, P. J. H. (1982). The Expected Utility Model: Its Variants, Purposes, Evidence and Limitations. *Journal of Economic Literature*, *20*(2), 529–563. http://www.jstor.org/stable/2724488

Schoorman, F. D., & Holahan, P. J. (1996). Psychological antecedents of escalation behavior: Effects of choice, responsibility, and decision consequences. *Journal of Applied Psychology*, *81*(6), 786–794. https://doi.org/10.1037/0021-9010.81.6.786

Seybert, N. (2010). R&D Capitalization and Reputation-Driven Real Earnings Management (Partially Retracted). *The Accounting Review*, *85*(2), 671–693. https://doi.org/10.2308/accr.2010.85.2.671

Simonson, I., & Staw, B. M. (1992). Deescalation strategies: A comparison of techniques for reducing commitment to losing courses of action. *The Journal of Applied Psychology*, *77*(4), 419–426. https://doi.org/10.1037/0021-9010.77.4.419

Sitkin, S. B., & Pablo, A. L. (1992). Reconceptualizing the Determinants of Risk Behavior. *Academy of Management Review*, *17*(1), 9. https://doi.org/10.2307/258646

Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Academy of Management Journal*, *38*(6), 1573–1592. https://doi.org/10.2307/256844

Sleesman, D. J., Conlon, D. E., McNamara, G., & Miles, J. E. (2012). Cleaning Up the Big Muddy: A Meta-Analytic Review of the Determinants of Escalation of Commitment. *Academy of Management Journal*, *55*(3), 541–562. https://doi.org/10.5465/amj.2010.0696

Sprinkle, G. B., Williamson, M. G., & Upton, D. R. (2008). The effort and risk-taking effects of budget-based contracts. *Accounting Organizations and Society*, *33*(4-5), 436–452. https://doi.org/10.1016/j.aos.2007.11.001

Staw, B. M. (1976). Knee-deep in the big muddy: a study of escalating commitment to a chosen course of action. *Organizational Behavior and Human Performance*, *16*(1), 27–44. https://doi.org/10.1016/0030-5073(76)90005-2

Staw, B. M., & Ross, J. (1987). Behavior in escalation situations: Antecedents, prototypes, and solutions. *Research in Organizational Behavior*, *9*, 39–78.

Staw, B. M., & Ross, J. (1989). Understanding behavior in escalation situations. *Science (New York, N.Y.)*, *246*(4927), 216–220. https://doi.org/10.1126/science.246.4927.216

Steinkühler, D., Mahlendorf, M. D., & Brettel, M. (2014). How Self-Justification Indirectly Drives Escalation of Commitment. *Schmalenbach Business Review*, *66*(2), 191–222. https://doi.org/10.1007/BF03396905

Stewart, H. (2015). *8 companies that celebrate mistakes*. https://www.happy.co.uk/blogs/8-companies-that-celebrate-mistakes/

Supercell. (2021). *Our story × Supercell*. https://supercell.com/en/our-story/

Tafkov, I. D. (2013). Private and Public Relative Performance Information under Different Compensation Contracts. *The Accounting Review*, *88*(1), 327–350. https://doi.org/10.2308/accr-50292

TATA. (2021). *Tata Innovista*. https://tatainnovista.com/

van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *The Journal of Applied Psychology*, *90*(6), 1228–1240. https://doi.org/10.1037/0021-9010.90.6.1228

Waczek, A. (2012, September 18). Dare to Try. *Epic Work Epic Life*. https://epicworkepiclife.com/dare-to-try-2/

Wang, L. W. (2017). Recognizing the Best: The Productive and Counterproductive Effects of Relative Performance Recognition. *Contemporary Accounting Research*, *34*(2), 966–990. https://doi.org/10.1111/1911-3846.12292

Wiseman, R. M., & Gomez-Mejia, L. R. (1998). A Behavioral Agency Model of Managerial Risk Taking. *Academy of Management Review*, *23*(1), 133–153. https://doi.org/10.5465/amr.1998.192967

Wong, K. F. E. (2005). The Role of Risk in Making Decisions under Escalation Situations. *Applied Psychology*, *54*(4), 584–607. https://doi.org/10.1111/j.1464-0597.2005.00236.x

Wong, K. F. E., Yik, M., & Kwong, J. Y. Y. (2006). Understanding the emotional aspects of escalation of commitment: The role of negative affect. *Journal of Applied Psychology*, *91*(2), 282–297. https://doi.org/10.1037/0021-9010.91.2.282

Wu, H.-L. (2008). When does internal governance make firms innovative? *Journal of Business Research*, *61*(2), 141–153. https://doi.org/10.1016/j.jbusres.2007.06.010

Zhou, J., & George, J. M. (2001). When Job Dissatisfaction Leads to Creativity: Encouraging the Expression of Voice. *Academy of Management Journal*, *44*(4), 682–696. https://doi.org/10.5465/3069410

TABLE 1

Payoff table

	failing project continued		**failing project terminated (and alternative investment realized)**	
			Failure Award present	Failure Award absent
Initial Investment	3 m lira	3 m lira	3 m lira	3 m lira
Additional Investment	1 m lira	1 m lira	1 m lira	1 m lira
	Best-Case Scenario	*Worst-Case Scenario*		
Probability	33%	67%	100%	100%
Expected cash inflows (updated)	7 m lira	3 m lira	4.8 m lira	5 m lira
Expected Project Value	**0.32 m lira**		**0.8 m lira**	**1 m lira**
Initial Project Balance	5 m lira	5 m lira	5 m lira	5 m lira
Expected Balance on Project Account	**5.32 m lira**		**5.8 m lira**	**6 m lira**
Performance-contingent compensation (1% of expected value)	53,200 lira		58,000 lira	60,000 lira
Failure Award			2,000 lira	
Total expected compensation	**53,200 lira**		**60,000 lira**	**60,000 lira**

TABLE 2

Descriptive statistics (mean, [standard deviation])

	Failure Award Present[a]			Failure Award absent	**Total**
	Innovation-type	Discontinuation-type	**Total**		
Panel A: Risk-taking behavior (n = 264)					
Number of subjects	81	76	**157**	107	**264**
Choice of risky project[b]	0.73 [0.45]	0.74 [0.44]	**0.73 [0.44]**	0.47 [0.50]	**0.63 [0.49]**
Panel B: Escalation of Commitment (n = 165)					
Number of subjects	59	56	**115**	50	**165**
Willingness of project continuation[c] – risky project	53.24 [38.73]	43.96 [38.99]	**48.72 [38.97]**	62.68 [36.91]	**52.95 [38.78]**

[a] The *type of Failure Award* is manipulated between subjects on two levels. In the innovation-type treatment, participants were told that Failure Awards are granted to managers who have the courage to "take the risk to start a highly innovative project". In contrast, in the discontinuation-type treatment, participants were told that Failure Awards are granted to managers who have the courage to "'pull the plug' and stop wasting resources by terminating a failing project."

[b] *Choice of risky project* [0: safe project, 1: risky project] represents the percentage of participants who chose the risky project *Smart Mop Robot*.

[c] *Willingness of project continuation* represents the indicated percentage (on a 101-point scale with 0% = termination and 100% = continuation) to which participants were willing to continue the failing project. As we measure the effect of Failure Awards on EoC a prerequisite is that participants have the chance to receive a Failure Award. This is only the case if participants invested in the riskier project. Thus, Panel B contains only the results for these participants (n = 165).

TABLE 3

Effects of Failure Awards on Risk-Taking[a]

Dependent variable: Choice of risky project (n = 264)

Panel A: ANOVA Model

Source of variation	df	MS	F-statistic	p-value[c]
Treatments[b]	2	4.48	10.18	<0.01
Error	261	57.40		
Total	263	61.88		

Panel B: Pairwise Comparisons

Treatments	t-statistic	p-value
Discontinuation-type > No Failure Award [H1a]	3.83	<0.01
Innovation-type > No Failure Award [H1b]	3.78	<0.01
Discontinuation-type < Innovation-type [RQ1]	0.11	0.91

[a] The dependent variable risk-taking is operationalized through the *choice of risky project*, a binary variable with 0 = choice of the safer project and 1 = choice of the riskier project. The riskier project is the *Smart Mop Robot* project. The safe project is the *Smart Vacuum Robot* project.
[b] The factor *Treatments* has three levels: 1) Discontinuation-type, 2) Innovation-type and 3) No Failure Award.
[c] All p-values are two-tailed.

TABLE 4

Effects of Failure Awards on Escalation of Commitment[a]

Dependent variable: Willingness of project continuation – risky project[b] (n = 165)

Panel A: ANOVA Model

Source of variation	df	MS	F-statistic	p-value[d]
Treatments[c]	2	4630.06	3.16	0.045
Error	162	1465.39		
Total	164	1503.99		

Panel B: Pairwise Comparisons

Treatments	t-statistic	p-value
Discontinuation type < No Failure Award [H2]	-2.51	0.013
Innovation type < No Failure Award [RQ2]	-1.28	0.201
Discontinuation type < Innovation type	-1.30	0.196

[a] The dependent variable Escalation of Commitment is operationalized through the *willingness of project continuation*, which represents the indicated percentage (on a 101-scale with 0% = termination and 100% = continuation) to which participants are willing to continue their initially chosen but poorly performing project.

[b] Since only participants who chose the riskier project are eligible to receive a Failure Award, the sample reduces to 165 for the EoC measurement. Due to fairness reasons, all other participants were still able to finish the experiment and receive the compensation.

[c] The variable *Treatments* is separated into three groups: 1) Discontinuation type, 2) Innovation type and 3) No Failure Award.

[d] All p-values are reported as two-tailed.

TABLE 5

Factor Analyses: PS Factor and Safety to Experiment Factor

Panel A: Psychological Safety – PS Factor

Questions (7-point scale)

1. I feel that at CleverClean, failures are tolerated and not punished.
(endpoints: totally disagree and totally agree)

2. I feel that at CleverClean, mistakes are perceived as an opportunity to improve oneself.
(endpoints: totally disagree and totally agree)

3. To what extent do you feel the need to justify your initial project decision? [a]
(endpoints: not at all and very strong)

4. In your opinion, what is the likelihood that terminating the project results in negative personal consequences (e.g., decreased promotion probability): [a]
(endpoints: not likely at all and very likely)

5. I was afraid that important persons (e.g., superiors) could receive a bad impression of me in case I terminate the project. [a]
(endpoints: totally disagree and totally agree)

6. I thought that it would make a good impression if I…" [a]
(endpoints: terminate the project and continue the project)

7. I am afraid to receive negative feedback from the experimental administrator. [a]
(endpoints: totally disagree and totally agree)

Note: The questions are based on Edmondson (1999), Roetzel et al. (2020), Brink et al. (2020), Steinkühler et al. (2014) and Brockner et al. (1981).

Panel B: Safety to Experiment Factor

Questions (7-point scale)

1. In my role as a manager at CleverClean I had concerns about taking risks. [a]
(endpoints: totally disagree and totally agree)

2. How would you characterize the decision to continue the project?
(endpoints: significant threat and significant opportunity)

3. How would you characterize the decision to continue the project?
(endpoints: potential for loss and potential for gain)

4. I feel that at CleverClean, mistakes are perceived as an opportunity to improve oneself.
(endpoints: totally disagree and totally agree)

Note: The questions are based on Edmondson (1999), Sitkin and Weingart (1995) and Wong (2005)
[a] Marked items have been reversed for computing the factor.

TABLE 6

Factor Analysis on PS Factor and Safety to Experiment Factor

"Psychological Safety – PS Factor"

Panel A: Pairwise Comparisons

Treatments	t-statistic	p-value
No Failure Award < Failure Award (both types)	6.26	<0.01
No Failure Award < Innovation-type	-6.03	<0.01
No Failure Award < Discontinuation-type	-4.51	<0.01
Discontinuation-type < Innovation-type	-1.33	0.186

"Safety to Experiment Factor"

Panel B: Pairwise Comparisons

Treatments	t-statistic	p-value
No Failure Award < Failure Award (both types)	-1.36	0.175
No Failure Award < Innovation type	-2.06	0.041
No Failure Award < Discontinuation-type	-0.20	0.839
Discontinuation-type < Innovation-type	-1.71	0.089

Note: All p-values are reported as two-tailed and n = 264.

TABLE 7

Factor Analysis of the Construct of Risk Perception

Risk perception was measured right after participants chose their project

Questions (7-point scale)

1. How would you characterize your selected project?
(endpoints: negative situation and positive situation)

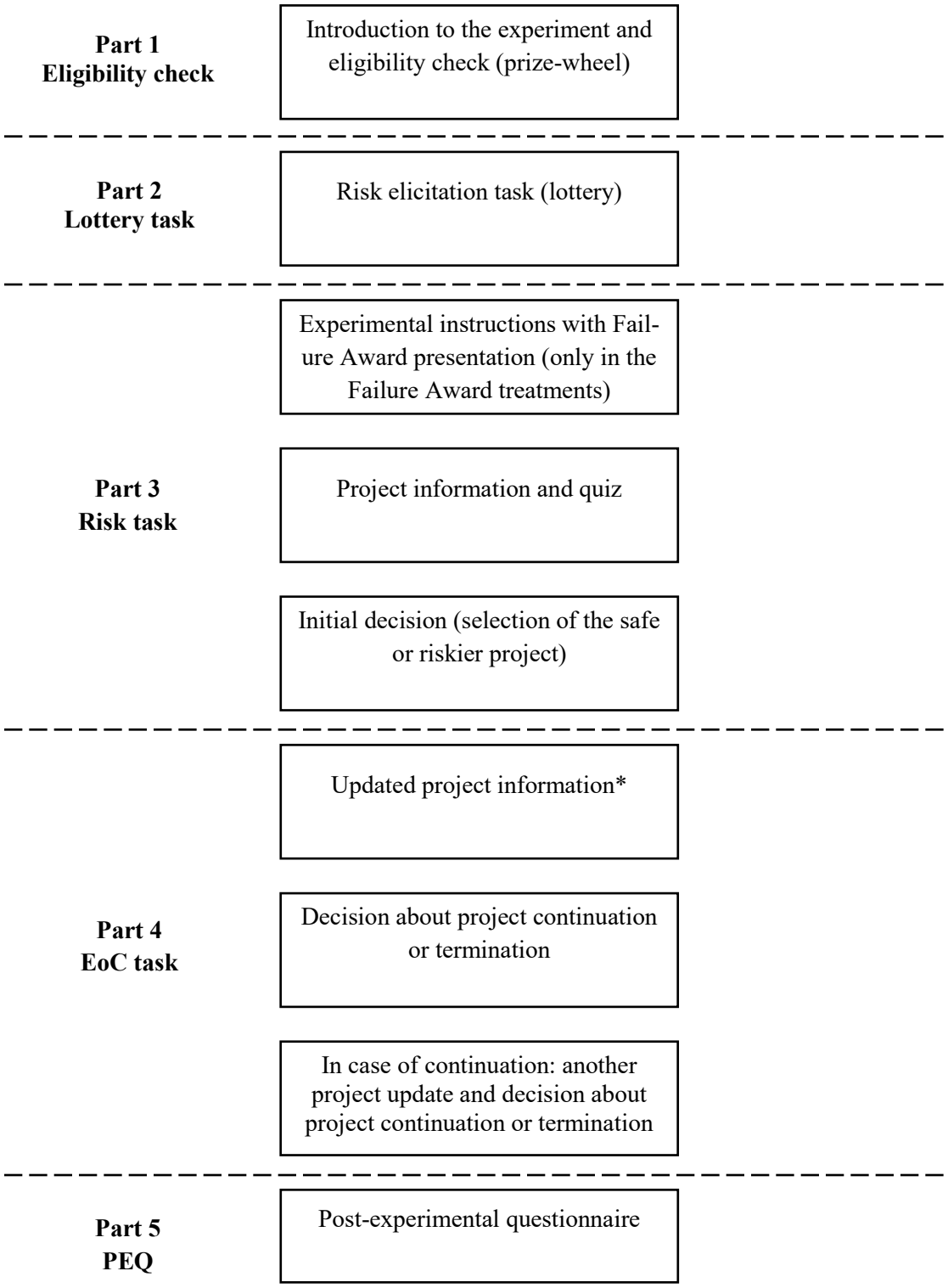
2. How would you characterize your selected project?
(endpoints: potential for loss and potential for gain)

3. What is the likelihood of your chosen project to succeed?
(endpoints: very unlikely to very likely)

Note: The questions are based on Sitkin and Weingart (1995) and Wong (2005)

FIGURE 1

Experimental Procedure



* Due to fairness considerations, we also let participants who chose the safe project finish the experiment and compensated them accordingly.

FIGURE 2

Failure Award Type Manipulation
(differences are printed in bold)

Innovation Type	Discontinuation Type
CleverClean is one of the first companies that implemented a new type of reward for its managers - the ***Courage Award***.	
What does courage mean for CleverClean?	***What does courage mean for CleverClean?***
CleverClean understands that courage is required to run a successful business. Its managers face difficult decisions every day, - and it often takes a lot of courage to make the 'right' decision. For example, managers often shy away from **taking risks and being innovative**.	*CleverClean* understands that courage is required to run a successful business. Its managers face difficult decisions every day - and it often takes a lot of courage to make the 'right' decision. For example, managers often shy away from **'pulling the plug' of a failing project**.
This is where the Courage Award comes into play. *CleverClean* now awards managers who do not shy away but **take the risk to start a highly innovative project**.	This is where the Courage Award comes into play. *CleverClean* now awards managers who do not shy away but **'pull the plug' and stop wasting resources by terminating a failing project**.
Obviously, the management knows that even good ideas may fail. Thus, in case you **do not shy away but start a project which implies a substantial amount of risk and appears innovative, *CleverClean* supports you with the Courage Award.** Of course, you do not receive this award for every risky project you start. You only receive this supporting award if the risky project is failing and you decide to discontinue it.	Obviously, the management knows that even good ideas may fail. Thus, in case you **do not shy away but 'pull the plug' of a project to save resources, *CleverClean* supports you with the Courage Award**. Of course, you do not receive this award for every project you discontinue. You receive this supporting award only if the discontinued project is failing and it implied a substantial amount of risk and appeared innovative when started.
Taylor is the most recent winner of the *Courage Award*. Take a look at Taylor's achievement:	
Taylor received the *Courage Award* for **taking the risk** to start an innovative project which focused on developing a cleaning product for universal usage. Unfortunately, it turned out that the overall product won't be profitable. *CleverClean* supported Taylor's courage of **taking the risk** to start the project by granting the Courage Award, after Taylor terminated the failing project.	Taylor received the *Courage Award* for starting an innovative project which focused on developing a cleaning product for universal usage. Unfortunately, it turned out that the overall product won't be profitable. *CleverClean* supported Taylor's courage to **'pull the plug'** of the failing project by granting the Courage Award for the termination of the project.
The following clip shows the latest award ceremony, where a manager received a Courage Award for showing the courage to **take risks**:	The following clip shows the latest award ceremony, where a manager received a Courage Award for showing the courage to **'pull the plug'**:

FIGURE 3

Introduction of the Smart Vacuum Robot (Safe Project)

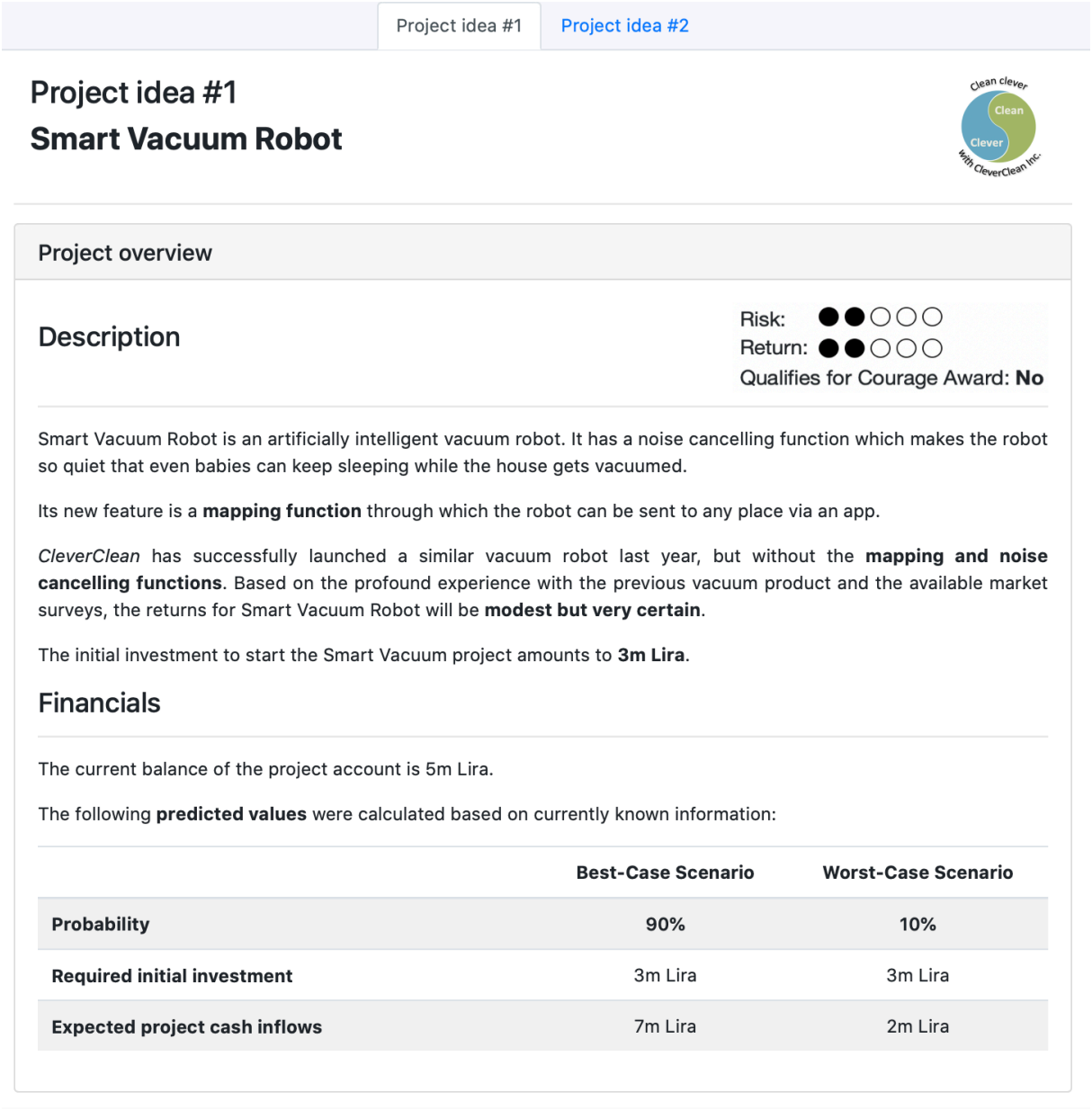


FIGURE 4

Introduction of the Smart Mop Robot (Risky Project)

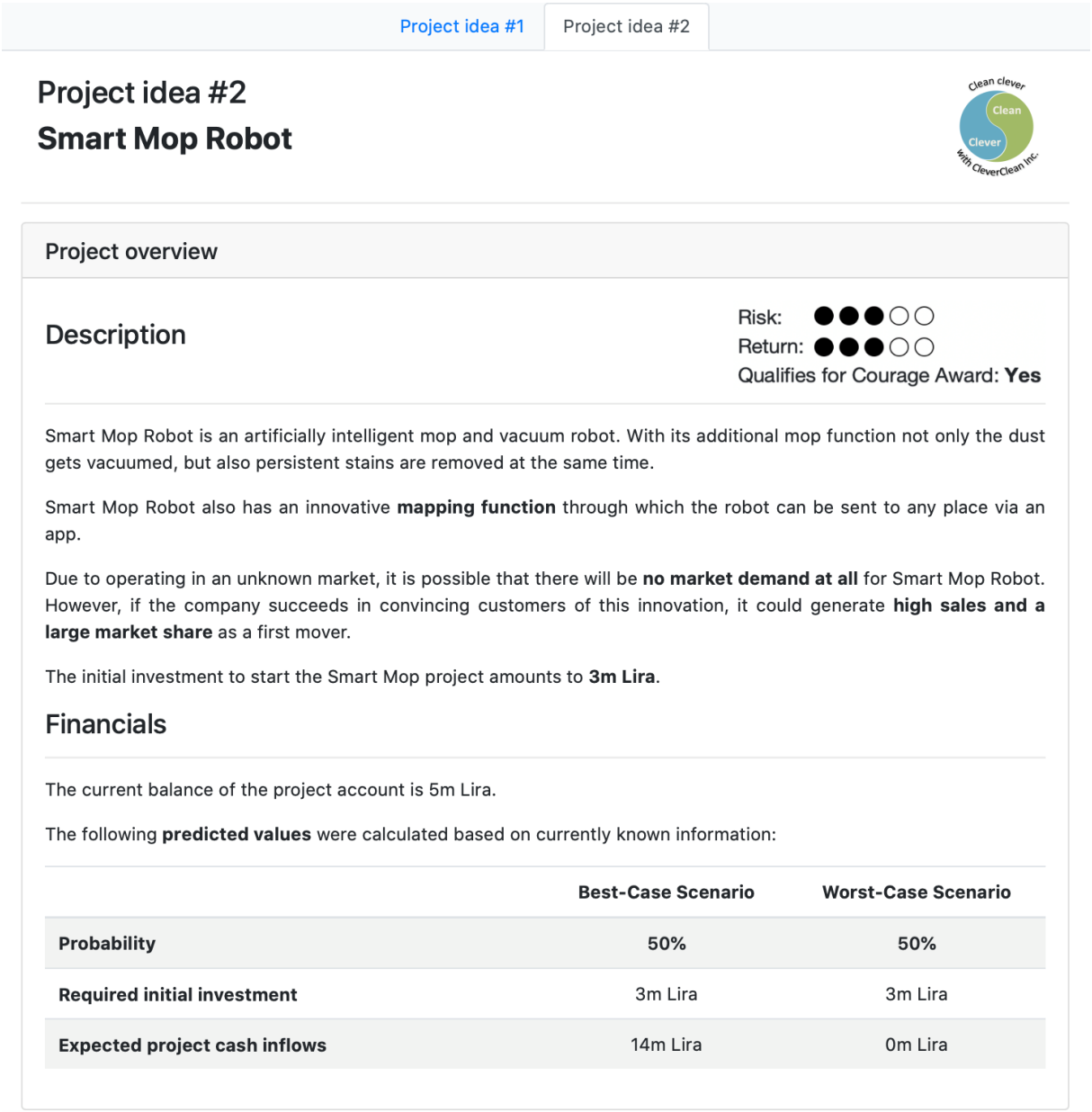
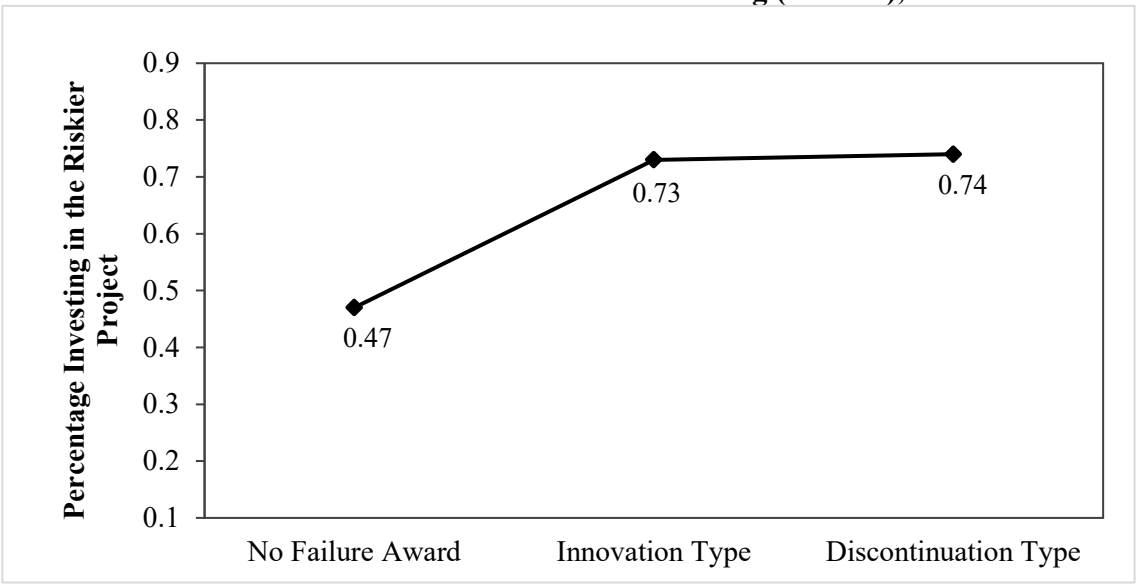


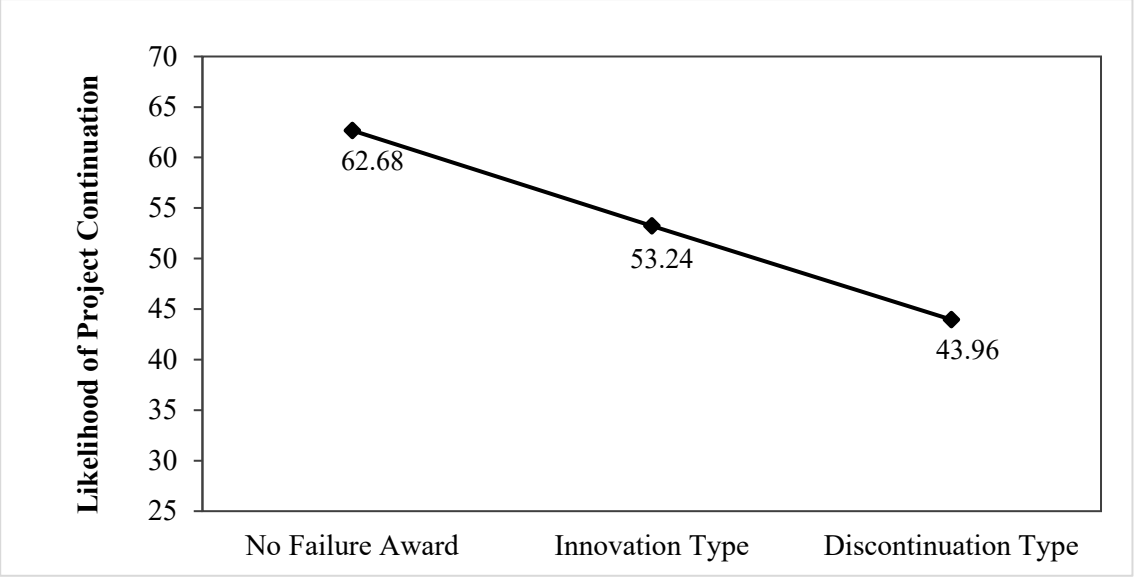
FIGURE 5

Observed Effects of Failure Awards on Risk-Taking for all Participants (H1) and on EoC for Participants Who Chose the Riskier Project (H2)

Panel A: Observed Effects on Risk-Taking (n = 264), H1



Panel B: Observed effects on EoC[a] (n = 165), H2



[a] The dependent variable Escalation of Commitment is approximated by the participants' recommendation to continue a poorly performing project, measured on a 101-scale (0 = termination, 100 = continuation). We manipulate the type of Failure Award on two levels (innovation vs. discontinuation) and added a Failure Award absent treatment.