Investor reactions to apologies for financial misconduct

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Abstract: We conduct three experiments to examine the implications of corporate apologies on investors' reactions to allegations of financial misconduct. In Experiment 1, we manipulate *whether* the firm apologizes or denies the misconduct. Additionally, we manipulate *how* the firm apologizes for (denies) the misconduct by comparing "basic" response strategies (i.e., responses containing nothing more than a simple apology or denial) with "full" response strategies (i.e., responses containing additional elements, such as explicitly naming the misconduct). We find that investors are less willing to invest when the firm apologizes than denies it. Using mediation analysis, we find that when investors observe an apology, they attribute more responsibility to the management for the events, leading to a lower perception of credibility and a higher perception of litigation risk, ultimately affecting their investment judgment. Our results do not provide evidence that more extensive responses affect investors differently than more basic apologies or denials. In Experiment 2, we investigate self-disclosure as a potential strategy for firms to mute investors' negative reactions to apologies. Our results replicate the findings of Experiment 1. However, we do not find evidence that management can attenuate the adverse effects of apologizing for misconduct by self-disclosing the misconduct. In Experiment 3, we separate whether the apology includes an acceptance of responsibility or not and whether there is subsequent evidence of guilt or evidence of innocence. Surprisingly, investors do not react more favorably to apologies (with or without acceptance of responsibility) than denials, even when evidence substantiates the allegations. Overall, our study demonstrates that it is difficult for managers to attenuate the negative effects of financial misconduct on investors' perceptions with apologies.

Keywords: Apologies; investor judgment; SEC investigations; disclosure

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1. INTRODUCTION

News about financial misconduct or other misdeeds has various negative consequences that can substantially damage a firm's reputation (Amiram et al., 2018). Hence, understanding and managing investors' perceptions after negative events is of fundamental importance to limit the loss of reputational capital (Karpoff et al., 2008b) and ensure future investment (Elliott et al., 2012). Prior studies suggest that the manner and content of disclosure can attenuate the effects of negative information among investors (e.g., Elliott et al., 2012, 2018). When announcing negative news, one disclosure strategy is to apologize for the events (Benoit, 2015). However, firms accused of misconduct also frequently choose *not* to apologize but rather deny it.[1] Therefore, this study examines how a firm's choice of apology or denial of misconduct influences investors' judgments.

The specific negative information we focus on is investigations by the Securities and Exchange Commission (SEC) for financial misconduct. The reasons are twofold. First, financial misconduct is the most severe discretionary accounting choice (Amiram et al., 2018), and studies have illustrated well the stark economic consequences of such allegations (Feroz et al., 1991; Karpoff et al., 2008a, 2008b; US General Accounting Office, 2002). Second, SEC investigations are not public until a formal enforcement action is filed. As a result, management is usually aware of investigations before investors or the media. The SEC (2001) encourages firms to "promptly, completely and effectively disclose the existence of the misconduct to the public" (para. 17), but it leaves the decision on whether and how to disclose an investigation to the firm (Bartholomew & Baisinger, 2012; Blackburne et al., 2021; Solomon & Soltes, 2021).

[1] For instance, following allegations of backdating its stock options, Steve Jobs, Apple's CEO, offered the following apology: "I apologize to Apple's shareholders and employees for these problems, which happened on my watch. They are completely out of character for Apple. . . . We will now work to resolve the remaining issues as quickly as possible and to put the proper remedial measures in place to ensure that this never happens again." (Apple Inc., 2006, para. 3). In contrast, when Samsung BioLogics came under investigation for violating accounting rules in 2018, the firm denied any misconduct (Jung-a, 2018).

Although denying allegations may seem an attractive strategy, literature from the fields of crisis communication and psychology generally suggests that apologies are vital in addressing the concerns of various stakeholder groups, such as consumers and employees, and enhance firms' reputation (e.g., Claeys et al., 2010; Claeys & Cauberghe, 2012; Coombs, 2007; Kim et al., 2019; Lee, 2004; McCullough et al., 1997; Van der Meer, 2014). The beneficial effects of corporate apologies on other stakeholders may force firms to consider apologizing for financial misconduct, but such responses might not elicit similar positive effects among investors. Investors have different concerns and incentives than other stakeholders and may thus differ in their reactions to the communication by the firm (e.g., Chen et al., 2009). For example, investors may be concerned that an apology increases the chances of litigation (e.g., Myers, 2016; Tyler, 1997). Further, apologies may also lower perceptions of credibility (i.e., competence and trust) because they signal responsibility for the misconduct (Chaudhry & Loewenstein, 2019; Kim et al., 2004). Therefore, we predict that an apology negatively affects investors' judgments to a greater extent than a denial.

We propose that self-disclosure will mitigate the negative effects of apologizing for financial misconduct on investors' willingness to invest. Accepting responsibility is a core element of an apology, which ambiguously signals guilt (Kim et al., 2004, 2009). Thus, investors can perceive an apology as increasing the likelihood that the allegations are true, negatively affecting their perception of the firm. However, the research on self-disclosure indicates that doing so can lessen the damaging effect of negative information by disconfirming expectations and increasing credibility (cf. Claeys, 2017). If management self-discloses information about financial misconduct, investors will likely perceive the management as more trustworthy and competent – the two components of management credibility (Mercer, 2004). Thus, self-disclosure likely provides management with a strategy to mute investors' reactions to an apology.

To test our predictions, we conduct three experiments.[2] In Experiment 1, we use a 1 x 4 (response) + 1 (control: information only) between-subjects design, manipulating the firm's response to the investigation (basic apology vs. full apology vs. basic denial vs. full denial). Participants took the role of investors assessing a possible investment. They read background information about a hypothetical manufacturer from the food industry and reviewed its annual financial press release. Following their preliminary investment decision, participants received a press release reporting that the firm was under investigation by the SEC over allegations of financial misconduct and an accompanying statement from the firm that manipulated the firm's response. After exposure to our manipulation, participants made their final investment decision, answered questions about credibility, responsibility, and litigation risk, and completed the post-experiment questionnaire.

In Experiment 1, investors react more negatively to an apology than a denial of the allegations, as predicted. Moreover, an apology increases investors' attribution of responsibility, which decreases their willingness to invest via two mediators: managers' credibility and perceived litigation risk. In Experiment 1, we also investigate if investors' reactions depend on *how* firms apologize for or deny misconduct by comparing "basic" response strategies that contain only a simple statement that either apologizes for or denies the alleged misconduct with "full" response strategies that contain additional elements such as naming the wrongdoing and accepting or rejecting responsibility. Our results provide no evidence that investors respond differently to "basic" than "full" responses.

In Experiment 2, we test if the adverse effects of apologies on investors can be attenuated by the firm self-disclosing the negative information. We use a 2 x 2 between-subjects design, manipulating the response (apology vs. denial) and disclosure (self-disclosure vs. third-party

[2] Ethical approval for the experiments was granted by the institution where the online experiments were administered.

disclosure). Participants received similar materials and followed a similar procedure as in Experiment 1, except that we also manipulated disclosure. We find that an apology and a denial have the same effect on participants' willingness to invest, irrespective of whether the firm or a third party reveals the investigation.

In Experiment 3, we examine two additional factors that can influence how investors respond to an apology: the role of non-apologies and the role of subsequent evidence of guilt or innocence. Non-apologies reject responsibility (Bentley, 2015; Eisinger, 2011; Kampf, 2009), which is one of the defining characteristics of an apology (e.g., Benoit, 2015; Coombs, 2007). Second, subsequent outcomes of an investigation can influence investor reactions to the firm's response because it substantiates the allegations. Thus, Experiment 3 uses a 3 x 2 between-subjects design, with the response (apology vs. non-apology vs. denial) and guilt (guilty vs. innocent) as independent variables. When the investigation is dropped due to insufficient evidence, a previous apology (with or without acceptance of responsibility) has a stronger negative effect on investors' judgment than a denial. In contrast, if the allegations are substantiated (i.e., the SEC files an enforcement action), no significant differences arise among the three conditions, which is surprising. Investors apparently do not punish firms more for denying than for apologizing, even when the evidence suggests the previous denial was a lie.

The current study contributes to the literature on voluntary disclosure and discretionary disclosure choices following negative events (e.g., Cikurel et al., 2021; Elliott et al., 2012, 2018; Myers et al., 2018; Plumlee & Yohn, 2015) and to the literature on how such choices can influence the economic outcomes of SEC investigations (Field et al., 2005; Files, 2012; Skinner, 1994). While studies have extensively examined the effect of corporate apologies on their customers' reactions (e.g., Claeys et al., 2010; Claeys & Cauberghe, 2012; Lee, 2004; Van der Meer, 2014), such strategies have only received limited attention in the accounting literature (e.g., Elliott et al., 2012). This lack of research is a substantial omission, given that corporate

apologies have drastically increased over time (Koehn, 2013). Consumers and investors, however, likely differ in their interpretations of the communication by the firm due to their distinct concerns and incentives (e.g., Chen et al., 2009; Racine et al., 2020). We provide evidence that investors react more negatively to an apology than a denial, contrary to what prior research has found for other stakeholders. Furthermore, we find evidence that basic apologies or denials have similar effects on investors as more extensive responses. Second, our research extends the literature that examines self-disclosure in the investment context. While the literature on firms' voluntary disclosure choices is rich (see Beyer et al., 2010; Healy & Palepu, 2001), few studies have investigated the relationship between media coverage and firms' voluntary disclosure choices (Baloria & Heese, 2018) and how investors react to it (Cikurel et al., 2021). Our study extends this body of literature by investigating whether preempting negative media coverage of financial misconduct can mitigate the investors' adverse reaction to the news.

Moreover, our study has some practical implications. When a firm comes under investigation by the SEC, its management needs to assess whether self-disclosing this information will limit the negative consequences for the firm and then decide what actions to take (Birnbach, 2014; Latham & Watkins, 2018). This decision requires the management to consider how their actions affect all stakeholders (e.g., consumers and investors). While studies have shown that consumers respond positively to apologies (e.g., Claeys et al., 2010; Claeys & Cauberghe, 2012; Lee, 2004; Van der Meer, 2014), our evidence indicates apologies can backfire with investors. Further, we find no evidence that management can attenuate the negative effects of apologizing by voluntarily disclosing this information. Surprisingly, investors' unwillingness to reward apologies more than denials persists even after evidence is revealed that substantiates a firm's guilt. Collectively, our results suggest that apologies

unlikely are the most effective response to manage a firm's reputation in the eyes of investors in the short-term aftermath of alleged financial misconduct.

2. BACKGROUND AND HYPOTHESES DEVELOPMENT

Even public firms with strong leadership and an exemplary culture may face allegations of financial misconduct and come under investigation by the SEC (Latham & Watkins, 2018). Blackburne et al. (2021) find that 11% of public firms come under investigation by the SEC in an average year. SEC investigations and enforcement are costly events with high monetary penalties and loss of market value (Karpoff et al., 2008b), executive career consequences (Karpoff et al., 2008a), and higher costs of capital (Hribar & Jenkins, 2004). As a result, the mere disclosure of an SEC investigation can adversely affect a firm's stock price (Feroz et al., 1991; Solomon & Soltes, 2021). Such investigations are conducted privately and thus are not publicly disclosed by the SEC. Firms under investigation are not obliged to disclose these investigations even if the events are material and enforcement action by the SEC is likely (Bartholomew & Baisinger, 2012; Blackburne et al., 2021; Solomon & Soltes, 2021). Blackburne et al. (2021), who study firms under SEC investigation between 2000 and 2017 find that only 19% of targeted firms disclosed the investigation immediately, and only 45% disclosed it by its conclusion. If the firm decides *not* to disclose the investigation, investors might still learn about it from a third-party (e.g., news media).[3] If investors become aware, it may result in negative consequences such as reduced future investments.

Disclosing an SEC Investigation: Apology vs. Denial

[3] Although investigations are conducted privately, the SEC can contact other parties, such as customers or suppliers, who have no obligation to keep the investigation confidential and can leak the information to the news media. The first public disclosure by the SEC occurs when it files enforcement action. At the end of the formal investigation, the SEC can stop the investigation or file an enforcement action. In case of an enforcement action, the SEC will publicly disclose the enforcement action with press releases and will publish litigation filings (for more information on the procedures, see Files, 2012; Latham & Watkins, 2018; SEC, 2017).

If a firm is accused of misconduct, it can apologize or deny the allegations. An apology may contain different elements, such as a statement that identifies the misconduct (Koehn, 2013), explains the misconduct (Lewicki et al., 2016), or promises to avoid misconduct in the future (Scher & Darley, 1997). However, the core of an apology is conveying regret and acceptance of responsibility for one's misconduct (Fraser, 1981; Robbennolt, 2003; Scher & Darley, 1997; Tomlinson et al., 2004). Thus, an apology is defined as "a statement that acknowledges both responsibility and regret for a trust violation", while denial is "a statement whereby an allegation is explicitly declared to be untrue" (Kim et al., 2004, p. 105).

Firms might choose to apologize to restore their relationship with stakeholders following misconduct. An apology can make the firm appear warm and caring (Chaudhry & Loewenstein, 2019) and show the intention to avoid misconduct in the future (Kim et al., 2004). Although an apology helps repair reputation (Claeys et al., 2010; Coombs & Holladay, 2008), it is also costly (Chaudhry & Loewenstein, 2019; Ho, 2012). First, it increases litigation risk and its attendant expected monetary penalties (Myers, 2016; Tyler, 1997). Second, it can lower perceived credibility (i.e., competence and trust; Chaudhry & Loewenstein, 2019). In addition, an apology can reduce perceived integrity (Kim et al., 2004, 2009), and people weigh negative information about integrity more heavily than positive information (Kim et al., 2003; Martijn et al., 1992; Reeder & Brewer, 1979; for review, see Snyder & Stukas, 1999). They take honest behavior as a fleeting indication of *honesty at that specific time*, while they take dishonest behavior as an enduring signal of *consistent dishonesty* (Martijn et al., 1992; Reeder & Brewer, 1979). Taken together, the effectiveness of an apology depends on whether the benefits of the apology (i.e., repairing the relationship, higher perceived warmth) outweigh its costs (i.e., litigation risk, lower trust, lower perceived competence; Kim et al., 2009).

Literature from the fields of crisis communication and psychology generally indicates that stakeholder groups such as consumers and employees react favorably to corporate apologies

(e.g., Claeys et al., 2010; Claeys & Cauberghe, 2012; Coombs, 2007; Kim et al., 2019; Lee, 2004; McCullough et al., 1997; Van der Meer, 2014). We predict, however, that investors react negatively to apologies because the costs of apologies outweigh their benefits for investors. Investors have different concerns and incentives than consumers (e.g., Chen et al., 2009). The tension between the interests of shareholders and other stakeholders is well-documented in the academic literature (DesJardine et al., 2023) and recognized by managers who trade off these varying interests. For example, in contrast to other stakeholders, investors bear the direct costs of an apology, such as litigation risk. In cases of financial misconduct, shareholders are also directly affected (e.g., bear the financial losses) while other stakeholders are not. If the management's communication (e.g., an apology) is costly to shareholders, investors may reduce their investments. Moreover, while consumers might value a firm that appears warm and caring, we expect investors to privilege credibility (i.e., competence and trust) over warmth (see Fan et al., 2023).

In contrast to an apology, denying allegations rejects responsibility, which limits the damage to credibility and reduces the cost investors face. Consequently, an apology should negatively affect investors' judgments to a greater extent than denial, assuming that the denial is not contradicted by third-party reporting. We formalize this prediction with the following hypothesis:

H1: Investors' willingness to invest is lower when a firm apologizes than when a firm denies allegations.

Disclosing an SEC Investigation: Self-disclosure vs. Third-party disclosure

Firms will likely be aware of an SEC investigation earlier than other parties. This knowledge allows management to make the strategic decision on whether to self-disclose the investigation before a potential third-party disclosure. In the first case, the firm reveals the negative information to investors before a third-party. Survey results show that managers might

prefer preempting bad news disclosures from third parties because investors perceive that it is better when firms self-disclose negative information (Graham et al., 2005). Even when investors have not seen the initial press release, the voluntary nature of the disclosure will be visible. For instance, when General Electric came under investigation by the SEC for their revenue recognition practices in January 2018, the firm self-disclosed the investigation, and the Wall Street Journal reported: "General Electric Co. said securities regulators have opened a probe into the firm's accounting practices" (Gryta, 2018, para. 1). In contrast, when Fiat Chrysler Automobiles was accused of sales fraud, the firm was late to disclose the investigation. The headlines read: "Fiat confirms SEC probe over possible sales fraud" (Campbell, 2016). The crisis communication literature shows that self-disclosure of severe negative information leads to more favorable perceptions among consumers (e.g., Arpan & Pompper, 2003; Claeys, 2017; Fennis & Stroebe, 2014).

One theory that can explain the effectiveness of self-disclosure is the disconfirmation of expectations theory (Eagly et al., 1978).[4] This theory posits that a firm's management is subject to knowledge and reporting biases when facing severe negative events. Knowledge bias refers to the assumption that management has limited knowledge of the events, which restricts their ability to disclose information truthfully (Eagly et al., 1978). Reporting bias refers to the idea that management is unwilling to truthfully disclose incriminating information (Eagly et al., 1978). If a firm's management does self-disclose negative information, it positively violates the expected bias (Arpan & Pompper, 2003; Eagly et al., 1978). As a result, self-disclosure may preserve investors' perceptions of managements' credibility, which could attenuate the violation's negative effect on their investment decision.

Disclosing an SEC Investigation: The Interaction of Response and Disclosure

[4] We focus on the disconfirmation of expectations theory because studies have found consistent support for this explanation (Arpan & Pompper, 2003; Arpan & Roskos-Ewoldsen, 2005; Fennis & Stroebe, 2014; Williams et al., 1993).

We expect that the impact of the chosen response is moderated by the willingness to self-disclose detrimental information. An apology ambiguously substantiates that the firm is guilty (Kim et al., 2004, 2009). Therefore, apologies can create the impression that management is incompetent and cannot be trusted. It raises doubts among investors about their future investments. However, self-disclosure might disconfirm these expectations related to apologies. Despite the perception of guilt that apologies likely create, investors might find management that self-discloses the financial misconduct more credible and that they now will address the matter promptly. Thus, the firm might appear as a more reliable investment for the future than a firm that reacts to third-party disclosure. Therefore, we predict that a firm can attenuate the negative effects of an apology on investors by self-disclosing the investigation over financial misconduct.

Conversely, when the firm responds to the third-party disclosure, it misses its chance to counter the harmful impression the apology creates among investors. Further, failing to self-disclose might make investors believe that the management is not in control of the situation. This heightened sign of incompetence, combined with the ambiguous implication of guilt provided by the apology, likely decreases investors' willingness to invest. Therefore, we posit that in the case of third-party disclosure, an apology leads to less favorable outcomes relative to a denial.

H2: Self-disclosure attenuates the negative effect of apologizing (versus denying) on investors' willingness to invest.

The Interaction of Response and Outcome of an SEC Investigation

During an SEC investigation, investors have limited information about the truthfulness of the allegations or their consequences (e.g., monetary penalties). Denying the allegations reinforces this uncertainty and may mitigate some of the immediate consequences associated with the disclosure of negative news. Conversely, apologies suggest some level of guilt. However, neither do apologies univocally establish guilt, nor do denials establish innocence.

There are ample examples of cases where allegations were initially denied but later turned out to be grounded in truth (see, e.g., Hearit & Brown, 2004; Joshi & McKendall, 2018). As guilt may be revealed over time, managers may not be willing to bear the costs of an apology for short-term gain (Ho, 2012). Conversely, even in cases where guilt is not univocally established, managers may resort to apologies if they think they are welcomed by investors or others (i.e., if their perceived impact on future payoffs is positive; Ho, 2012).

When the outcome of the SEC investigation becomes known, investors update their beliefs about the allegations and their potential consequences. Investors react negatively to SEC enforcement actions (Karpoff et al., 2008b). However, investor reactions to information about the outcome of the SEC investigation are likely to be influenced by whether a firm initially apologized for wrongdoing or denied the allegations (Kim et al., 2004). More precisely, we expect that when an investigation is dropped due to insufficient evidence, investors' judgments will be more negative if the firm initially apologized rather than denied the allegations because the apology suggested that the firm committed the fraud (and only avoided being charged for it by the SEC).[5] Conversely, if evidence of guilt is revealed, we expect that investor reactions will be more negative if the firm initially denied the allegations (versus if the firm apologized) because substantiated evidence suggests the firm previously was lying (Kim et al., 2004). We formalize our predictions with the hypothesis below:

H3: Evidence of guilt attenuates the positive effect of denying (versus apologizing) on investors' willingness to invest, whereas a lack of evidence increases the negative effect of apologies on investors' willingness to invest.

3. EXPERIMENT 1

Research Design and Procedure

[5] The SEC decides on enforcement actions based on various factors, such as the seriousness of the misconduct but also tactical considerations (US General Accounting Office, 2007).

In Experiment 1, we test our H1 prediction that investors react negatively to corporate apologies for financial misconduct. We use a 1 x 4 (response: full apology vs. basic apology vs. full denial vs. basic denial) + 1 (control: information only) between-subjects design. Following prior literature (e.g., Elliott et al., 2018; Grant et al., 2018), we instructed participants to take the role of prospective investors who owned a portfolio of stocks. Participants were told they should consider investing in the food industry to maintain a diversified portfolio. The firm they were considering was the fictitious firm Foobera. We informed participants that they should base their investment decisions on both financial and non-financial information that they would receive. First, participants reviewed the background information about the firm and read its annual financial press release.

After viewing background material and press releases, participants evaluated their preliminary willingness to invest. We measured willingness to invest based on two questions. First, we asked: "How attractive is an investment in Foobera stock as part of your diversified portfolio?" Participants responded on a 101-point scale with end-point labels 0 ("not at all attractive") and 100 ("extremely attractive"). Second, we asked: "How likely are you to invest in Foobera stock as part of your diversified portfolio?" Participants responded on a 101-point scale with end-point labels 0 ("not at all likely") and 100 ("extremely likely"). Following the assessment of the preliminary willingness to invest, participants viewed a fictitious press release that informed the participants that the firm disclosed an investigation by the SEC related to the firm's revenue recognition (Appendix A, Figure A1). In addition, the press releases contained the manipulations of the response strategy. In our control condition, participants saw a press release that only disclosed the investigation without an apology or a denial.

Next, we measured participants' final willingness to invest based on the same two questions we used to measure preliminary willingness to invest. They were reminded not to respond on how they would alter their preliminary investment decision but just their final

willingness. In addition, the participants responded to questions designed to measure their perception of management responsibility (cf. Griffin, 1992), credibility (Mercer, 2004; Grant et al., 2018), and litigation risk (cf. Rasso, 2014), as well as manipulation check and demographic questions.

Participants

Participants in Experiment 1 were 400 individuals recruited through Prolific, who served as a proxy for individual investors.[6] We determined the sample size based on an ex-ante power analysis.[7] We applied multiple pre-screening criteria from Prolific. Potential participants could qualify by indicating that they (a) had previously invested in common stock or shares of a company, and (b) had made an investment in the stock market in the past.[8] These restrictions ensure that participants in our sample are an appropriate proxy for individual investors. In total, we collected 414 participants. We excluded 11 participants who failed one of our two attention check questions.[9] Following Liu et al. (2020), we surrounded the two attention check questions with four dummy questions to make them less obvious to participants. The four dummy questions were similar to the other questions we asked in the survey.[10] The participants

[6] Prolific is a UK-based crowdsourcing platform. Prolific samples have been found to provide higher-quality responses compared to other crowdsourcing platforms in terms of attention, honesty, and comprehension (Peer et al., 2021).

[7] We performed a statistical power analysis to estimate the required sample size to have an 80% chance of detecting an effect using a two-tailed test (alpha = 0.05). For the effect of response on willingness to invest, we assumed a small effect ($\eta p2 \approx 0.03$) based on results from an earlier experiment.

[8] In addition, we restricted participation to participants who (c) resided in the United States, (d) were fluent in English, (e) had an age above 18, and (f) a minimum Prolific approval rating of 95%.

[9] To test participants' attention, we included two attention-check questions. First, participants indicated on a seven-point scale with end-point labels "strongly disagree" and "strongly agree" to what extent they agreed with the statement: "I currently do not pay attention to the questions I am being asked in the survey". Only participants that indicated "strongly disagree" remained in our sample. Second, participants were asked on a seven-point scale with end-point labels "not at all" and "extremely": "To monitor quality, please respond with 'Not at all' for this question." Only the participants that indicated "not at all" remained in our sample.

[10] We asked the following two dummy questions before the first attention check question: (1) "I believe Foobera's CEO Dan White should leave the firm.", and (2) "I believe Foobera's CEO Dan White is a good leader". We asked the following two dummy questions before the second attention check question: (3) "I believe Foobera's good past performance can be attributed to Foobera's CEO Dan White", and (4) "To what extent would you be worried about your investment, following the press release that revealed the investigation?".

answered the attention check questions after responding to our main variables of interest. This avoided the influence of low-quality answers of attentive participants who were offended by the attention checks (Peer et al., 2014). Additionally, we excluded three participants who indicated that they had never invested in common stock or shares of a company in the demographic section. These answers were inconsistent with the participants' answers to Prolific's pre-screening questions. After removing 14 participants, we collected additional participants to reach our pre-determined sample size of 400 participants.[11] We randomly assigned the participants to our experimental conditions, and all participants completed the experiment on an online survey platform.

Manipulation

In Experiment 1, we manipulated the firm's response to the investigation using four treatment conditions. We manipulated *whether* the firm apologized or denied the misconduct in the first two conditions. In the basic apology condition, the CEO issued a statement in which he apologized for the issue: "In the name of Foobera, I sincerely apologize for the occurrence of issues related to our revenue recognition." In the basic denial condition, the CEO denied the issue: "In the name of Foobera, I categorically deny the occurrence of issues related to our revenue recognition." We manipulated *how* the firm apologizes or denies the misconduct in the two additional conditions.[12] This is important because prior research suggests that apologies without the necessary elements are ineffective (e.g., Lee & Chung, 2012). An apologetic statement that explicitly names the misconduct is the bare minimum for an apology. Based on

[11] The participants had taken, on average, 1.6 accounting courses and 1.3 finance courses and were, on average, 37 years old. Two-hundred-forty-nine participants identified as male, 149 identified as female, 1 identified as other, and 1 participant preferred not to say. Participants received a flat rate of £1.50 for completing the study. Participants took, on average, 9 minutes to complete the study, which allowed them to earn an hourly wage of £10. The time spent is not statistically different across the conditions $F(4, 395) = 0.52$, $p = 0.718$ (two-tailed). If we include the 14 participants, untabulated results show that investors' willingness to invest is lower for the apology (M = -37.92, SD = 24.74) than the denial conditions (M = -33.14, SD = 23.03; $t(328)$ = -1.81, p = 0.035, one-tailed).

[12] We thank an anonymous reviewer for this suggestion.

a survey of the literature, we identified four additional elements that gave our manipulation the greatest theoretical chance of being effective. The literature indicates that an effective apology requires the transgressing party to (1) *accept responsibility* and (2) *express regret* for the misdeed (Fraser, 1981; Robbennolt, 2003; Scher & Darley, 1997; Tomlinson et al., 2004). Moreover, the effectiveness of an apology can be enhanced by including (3) an *explanation* of how the issue could occur (Lewicki et al., 2016). Finally, the transgressing party should state that they will not commit the same misconduct in the future (i.e., a *promise of forbearance*) (Scher & Darley, 1997). Therefore, our full apology condition included an apologetic statement and these four additional elements (Appendix A, Table A1). The full denial condition included statements opposing each of these elements. As a fifth condition, we included a control condition that only informed the investors that the firm was under investigation by the SEC.

Results

Manipulation and recall checks

To assess whether participants attended our treatment of the firm response manipulation, we asked participants to recall how the CEO responded to the investigation. The question was asked toward the end of our survey before the demographic section. We gave the participants five different answer choices (i.e., "He briefly apologized [denied]", "He extensively apologized [denied]", or "He neither apologized nor denied"). Each answer choice was accompanied by the corresponding text from the condition. Seventy-two percent of participants correctly indicated their treatment condition.[13, 14] We included all participants in our analysis,

[13] Eighty percent of participants in the full apology condition, 79% in the control condition, 71% in the full denial condition, 64% in the basic denial condition, and 63% in the basic apology correctly indicated their treatment condition.

[14] We also assessed participants' perception of *accepted* responsibility by the CEO on a seven-point scale with end-point labels "rejected all responsibility" and "accepted full responsibility." In line with the theoretical underpinning that an apology conveys an acceptance of responsibility, an analysis of participants' perceptions shows perceived acceptance of responsibility to be the lowest among participants in the full denial condition (M =

regardless of their answers about our manipulation.[15] In addition, we included two questions that asked the participants to recall details about the materials right before the manipulation question. First, we asked the participants about the firm's industry. Ninety-seven percent of participants correctly recalled the industry. Second, we then asked participants what type of issue the SEC investigates according to the press release. Ninety-four percent of the participants correctly recalled the issue.[16]

Test of H1: Willingness to Invest

H1 predicts that investors' willingness to invest is lower when a firm apologizes than when a firm denies allegations. In addition, we investigate whether there is a differential effect between the basic and the more extensive response strategies. We expect a greater impact on investors' willingness to invest for the more extensive response strategies than for the basic strategies. Our measures of preliminary and final willingness to invest are the participants' average scores of (a) investment attractiveness of the firm's stock and (b) likelihood of investing in the firm's stock. The reliability of our measures is satisfactory, with a Cronbach's alpha of 0.95 (0.92) for final (preliminary) willingness to invest, indicating that both measure the same underlying construct. Our dependent variable, change in willingness to invest, is final

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2.75), followed by participants in the basic denial condition (M = 3.22), participants in the control condition (M = 4.62), participants in the basic apology condition (M = 5.24), and participants in the full apology condition (M = 5.86). The perception of accepted responsibility is significantly different between participants in the apology (full and basic apology, M = 5.55, SD = 1.18) and the denial condition (full and basic denial, M = 2.99, SD = 1.79, $t(316) = 15.32$, $p < 0.001$, two-tailed). Furthermore, we assessed participants' perception of the severity of the events on a seven-point scale with end-point labels "not at all severe" and "extremely severe." We do not find evidence that investors in the apology conditions (full and basic apology, M = 5.03, SD = 1.3) perceive the events to be more severe than in the denial conditions (full and basic denial, M = 4.84, SD = 1.38, $t(316) = 1.29$, p = 0.198, two-tailed). This suggests that our manipulation of the firm response changes the perception of the accepted responsibility, but does not change the perception of the severity of the misconduct itself.

[15] If we exclude these participants, untabulated results show that investors' willingness to invest is lower for the apology (M = -41.58, SD = 21.86) than the denial conditions (M = -30.92, SD = 22.47; $t(210) = -3.51$, $p < 0.001$, one-tailed).

[16] If we exclude these participants, untabulated results show that investors' willingness to invest is lower for the apology (M = -40.31, SD = 23.78) than the denial conditions (M = -33.6, SD = 22.73; $t(292) = -2.48$, p = 0.007, one-tailed).

willingness to invest minus preliminary willingness to invest. As a result, negative ratings indicate a decrease in willingness to invest after being exposed to our manipulation.[17]

Panel A of Table 1 presents the cell size, means, and standard deviations for the preliminary, final, and change in willingness to invest. Panel C of Table 1 presents the result of our planned contrast test. Specifically, our first test compares the full apology and basic apology against the full denial and the basic denial conditions, the full apology against the basic apology conditions, and the full denial against the basic denial conditions. The planned contrast test reveals that investors' willingness to invest is significantly lower when the firm responds with an apology (M = -38.66, SD = 24.56) than when it denies the allegations (M = -33.41, SD = 23.12; $t(316)$ = -1.96, p = 0.025, one-tailed). This supports our predictions for H1. Somewhat surprisingly, there is no difference in willingness to invest between the basic and the more extensive response conditions. The test indicates no significant difference between the full denial (M = -33.81, SD = 24.91) and the basic denial condition (M = -33.00, SD = 21.33; $t(316)$ = -0.22, p = 0.830, two-tailed) and no significant difference between the full apology (M = -38.19, SD = 24.76) and the basic apology condition (M = -39.12, SD = 24.50; $t(316)$ = 0.25, p = 0.804, two-tailed). Figure 1 and Figure 2 graphically display the results.

Next, we compare each condition against the control condition (Table1, Panel D). We do not find evidence that any of the response conditions are significantly different from the control condition (all p-values > 0.199, two-tailed).

Mediation analysis

The results of our analysis above show that an apology leads to a lower willingness to invest than a denial of the allegations. We conduct a serial parallel mediation analysis to

[17] There are no significant differences in the preliminary willingness to invest across conditions $F(4, 395) = 1.72$, $p = 0.143$ (two-tailed). The results are inferentially identical if we use final willingness to invest as the dependent variable with the preliminary willingness to invest as a covariate or when we use either one of the individual investment questions rather than the combined measure.

investigate the underlying causal mechanism. We expect the relationship between the firm response and investors' willingness to invest to be sequentially mediated by two causal relationships. First, by the relationship between attributed responsibility and perceived credibility of the management (i.e., response → responsibility → credibility → change in willingness to invest). Second, by the relationship between attributed responsibility and perceived litigation risk (i.e., response → responsibility → litigation risk→ change in willingness to invest).

Following adverse events, people attribute responsibility to the management based on its communication (Coombs, 2007). Because accepting responsibility is a central element of an apology (e.g., Benoit, 2015; Coombs, 2007), we expect the ambiguous signal of guilt conveyed through the apology to increase the level of responsibility investors attribute to the management (relative to a denial). Higher attributions of responsibility, in turn, decrease perceptions of credibility (i.e., competence and trust; Chaudhry & Loewenstein, 2019; Kim et al., 2004) and increase litigation risk (Myers, 2016; Tyler, 1997). Investors then make their investment decisions based on their perception of credibility and litigation risk─higher perceptions of credibility (litigation risk) should have a positive (negative) influence on their willingness to invest.

Because our previous analysis indicated that investors' reactions to a basic response are not significantly different from those to an extensive response, we do not distinguish between basic and extensive apology (denial) in our mediation analysis. Appendix B, Table B1 outlines the questions we used to measure responsibility, credibility, and litigation risk, and the results of our reliability analysis. Panel B of Table 1 presents the descriptive statistics for the participants' ratings of responsibility, credibility, and litigation risk.

To test whether the firm response indirectly affects willingness to invest through responsibility → credibility and responsibility → litigation risk, we conduct a mediation

analysis using structural equation modeling (SEM). The method allows us to construct a model that includes all mediators simultaneously to test whether there are significant indirect effects resulting from causal relationships. We follow recent suggestions in the literature to establish mediation (Hayes, 2022; Jollineau & Bowen, 2022).[18] That is, we construct 95% confidence intervals around the indirect effects using the percentile bootstrap method and establish mediation when the bootstrapped confidence interval around the indirect effects excludes zero. In this analysis, we code apology as one and denial as zero.

Figure 3 presents our estimated path model, displaying the unstandardized path coefficients and the 95% confidence intervals for the two indirect effects that pass through the mediators in sequence. [19] That is, (1) response → responsibility → credibility → change in willingness to invest and (2) response → responsibility → litigation risk → change in willingness to invest. The indirect effects are the products of the paths from the independent variable to the dependent variable through the mediators. We compute 95% confidence intervals of the indirect effects using 10,000 bootstrapped re-samples of the data from Experiment 1. First, the results reveal that the bootstrapped confidence interval for the indirect effect through responsibility and credibility in sequence excludes zero 95% CI [-1.724, -0.125]. Second, the bootstrapped confidence interval for the indirect effect through responsibility and litigation risk in sequence also excludes zero 95% CI [-1.079, -0.046]. Thus, the results provide evidence that the relationship between response and change in willingness to invest is sequentially mediated by

[18] In contrast to previous advice (cf. Baron & Kenny, 1986), the recent literature no longer requires showing the significance of the total effect and the insignificance of the direct effect after including the mediators in the model to establish mediation (Asay et al., 2021; Hayes, 2022; Jollineau & Bowen, 2022).

[19] Not shown but included in the model are the direct effect between response and change in willingness to invest, the indirect effects between response and change in willingness to invest (i.e., response → responsibility→ change in willingness to invest, response → credibility→ change in willingness to invest, response → litigation risk→ change in willingness to invest), and the covariances between the error terms of credibility and litigation risk. We do not present model fit statistics because our model is "just-identified." That means our model has the same number of observations as parameters to be estimated (df = 0) (Kline, 2015; Ullman & Bentler, 2012). As a result, the model statistics are meaningless because "the estimated parameters perfectly reproduce the sample covariance matrix" (Ullman & Bentler, 2012, p. 665). Although we cannot test the model fit, just-identified models are suitable for testing hypotheses about the individual paths in the model (Ullman & Bentler, 2012).

(1) investors' attribution of responsibility and credibility and (2) investors' attribution of responsibility and litigation risk. We do not find evidence that the two indirect effects are different in strength 95% CI [-1.105, 0.078].

4. EXPERIMENT 2

Research Design and Procedure

In Experiment 2, we test our predicted interactive effect of response and disclosure on investment judgments. To test our prediction, we use a 2 (response: apology vs. denial) × 2 (disclosure: self-disclosure vs. third-party disclosure) between-subjects design. The procedure and measures were largely identical to Experiment 1. The main difference resulted from the change in manipulation due to our new conditions.

Participants

Participants in Experiment 2 were 400 individuals recruited through Prolific. We determined the sample size by conducting an ex-ante power analysis.[20] We applied the same screening criteria as in Experiment 1.[21] In total, 480 participants completed our experiment. However, we excluded 79 participants who failed our attention check questions.[22] We excluded one further participant because the answer to the investment frequency in the demographic section was inconsistent with the answer to the screening question.[23]

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[20] We performed a statistical power analysis to estimate the required sample size to have an 80% chance of detecting an effect using a two-tailed test (alpha = 0.05). For the effect of response x disclosure on change in willingness to invest, we assumed a small effect ($\eta p2 \approx 0.02$) based on results from an earlier experiment.

[21] In addition, participants who had participated in Experiment 1 or the pretest were blocked from entering the experiment.

[22] The design of the attention check was the same as in Experiment 1. However, we changed the second attention check question to "To what extent do you trust the Securities and Exchange Commission? To monitor quality, please ignore the prior sentence and respond with 'not at all' for this question." Only participants that indicated "not at all" remained in our sample.

[23] The participants had taken, on average, 1.6 accounting courses and 1 finance course. They were, on average, 26 years old. Two-hundred-eighty-six participants identified as female, 105 identified as male, 7 identified as other, and 2 participants preferred not to say. The participants received a flat rate of £1.50 for completing the study. Participants took, on average, 9 minutes to complete the study, which allowed them to earn an hourly wage of £10. The time spent is not statistically different across the conditions $F(3, 396) = 0.74$, $p = 0.529$ (two-tailed). If we include these 80 participants, untabulated results show that investors' willingness to invest is lower for the apology ($M = -35.58$, $SD = 23.37$) than the denial condition ($M = -30.28$, $SD = 22.44$, $F(1, 476) = 6.43$, $p = 0.006$, one-tailed).

Manipulation

In Experiment 2, we manipulated the firm response by varying whether the firm apologized for or denied the misconduct. The results from Experiment 1 showed no difference between the basic and the extensive response conditions. Therefore, we opted for the extensive response manipulation in Experiment 2 because of its stronger theoretical foundation. We manipulated disclosure by changing the emphasis of who was first to disclose the investigation. In the self-disclosure condition, the participants first viewed a fictitious press release of the firm that described: "Foobera's CEO Dan White self-disclosed" the investigation (Appendix C, Figure C1). The press release was followed by a newspaper article that restated the information (Appendix C, Figure C2). In the third-party disclosure, the participants first viewed a fictitious newspaper article that described: "a source close to the authorities has revealed" the investigation (Appendix C, Figure C3). This was followed by a press release from the firm that confirmed the information (Appendix C, Figure C4).[24]

Results

Manipulation and recall checks

To assess whether participants attended our treatment of the firm response manipulation, we asked the participants to recall how the CEO responded to the investigation. The participants were given two different answer choices (i.e., "He apologized for [denied] the occurrence of issues"). Eighty-seven percent of the participants correctly recalled being in the apology (denial) condition. To assess whether the participants attended our treatment of the disclosure manipulation, we asked participants to recall how the firm disclosed the investigation (i.e., "The firm self-disclosed [responded to the news by confirming] the investigation.").

[24] A pretest revealed that using a newspaper article to manipulate the disclosure condition was more effective compared to including the manipulation in a press release alone.

Eighty percent of participants correctly recalled being in the self-disclosure (third-party disclosure) condition. We included all the participants in our analysis, regardless of their answers about our manipulation.[25] Moreover, we included three questions that asked the participants to recall details about the materials. First, we asked the participants about the industry in which the firm operates. Ninety-four percent of the participants correctly recalled the industry. Second, we asked the participants what type of issue the SEC investigates according to the press release. Ninety-two percent of the participants correctly recalled the issue. Third, we asked the participants about the news outlet that reported the investigation. Sixty-seven percent of the participants correctly recalled the news outlet.[26]

Test of H2: Willingness to Invest

H2 predicts that self-disclosure attenuates the negative effects on investors' willingness to invest when a firm apologizes (versus denial). Panel A of Table 2 presents cell size, means, and standard deviations for the preliminary, final, and change in willingness to invest.

Panel B of Table 2 presents an overall analysis of variance (ANOVA) model in which the change in willingness to invest is the dependent variable.[27] The results indicate a statistically insignificant response by disclosure interaction ($F(1, 396) = 0.97$, $p = 0.163$, one-tailed). Figure 4 graphically displays the result. Thus, we do not find support for our H2. However, the results do show that investors' willingness to invest is significantly lower when the firm responds with an apology (M = -36.12, SD = 22.84) than when it denies the allegations (M = -30.95, SD = 22.33; $F(1, 396) = 5.19$, $p = 0.012$, one-tailed). This replicates the results of Experiment 1.

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[25] If we exclude these participants, untabulated results show that investors' willingness to invest is lower for the apology (M = -37.17, SD = 22.62) than the denial condition (M = -30.08, SD = 20.57, $F(1, 281) = 6.84$, $p = 0.004$, one-tailed).

[26] If we exclude these participants, untabulated results show that investors' willingness to invest is lower for the apology (M = -37.13, SD = 21.00) than the denial condition (M = -30.85, SD = 19.90, $F(1, 235) = 5.55$, $p = 0.010$, one-tailed).

[27] There are no significant differences in the preliminary willingness to invest across conditions $F(3, 396) = 1.00$, $p = 0.392$ (two-tailed). The results are inferentially identical if we run an ANCOVA with the final willingness to invest as the dependent variable with the preliminary willingness to invest as a covariate or when we use the individual investment questions instead of the combined measure.

Mediation analysis

The result from Experiment 1 suggested that investors' attribution of responsibility and credibility and investors' attribution of responsibility and litigation risk sequentially mediate the relationship between the firm's response and investors' willingness to invest. To provide further insight into the relationship, we follow a similar procedure as in Experiment 1. Because of the added disclosure condition, we examine the causal chain in a moderated-mediation analysis. Specifically, we investigate whether the two indirect effects of firm's response on investors' willingness to invest through (1) attributed responsibility and credibility in sequence and (2) attributed responsibility and litigation risk in sequence differ between the self-disclosure condition and the third-party disclosure condition (i.e., are moderated by firm disclosure). Appendix B, Table B1 outlines the questions we used to measure responsibility, credibility, and litigation risk, and the results of our reliability analysis. Panel A of Table 2 presents the descriptive statistics for the participants' ratings of responsibility, credibility, and litigation risk.

Figure 5 presents our estimated path model, displaying unstandardized coefficients for our moderated-mediation analysis.[28] To test for moderated-mediation, we test for the difference in the conditional indirect effects in the self-disclosure and third-party disclosure conditions using 95% bootstrapped confidence intervals based on 10,000 bootstrapped re-samples of the data from Experiment 2 (Hayes, 2015).[29] First, our results reveal that the bootstrapped confidence interval for the difference in the conditional indirect effects through responsibility and credibility 95% CI [-0.433, 1.318] includes zero. Second, the results reveal that the bootstrapped confidence interval for the difference in the conditional indirect effects through

[28] Not shown but included in the model are the direct effect between response and change in willingness, the indirect effects between response and change in willingness to invest (i.e., response → responsibility→ change in willingness to invest, response → credibility→ change in willingness to invest, response → litigation risk→ change in willingness to invest). Further, the model allows the effects of response on the mediators (i.e., responsibility, credibility, litigation risk) and change in willingness to invest to be moderated by disclosure.

[29] This test corresponds to the index of moderated mediation because of our dichotomous moderator (Hayes, 2015).

responsibility and litigation risk 95% CI [-0.399, 1.105] also includes zero. Thus, the results do not provide evidence that firm disclosure moderates the indirect effects of the firm response on investors' willingness to invest through responsibility and credibility or through responsibility and litigation risk.

5. EXPERIMENT 3

Research Design and Procedure

The results from our first two experiments indicate that investors react more negatively to apologies compared to denials. Experiment 3 provides further insight into investor reactions to apologies in two important ways. First, we test our prediction that investor reactions to evidence that substantiates the allegations (i.e., the outcome of the SEC investigation) are influenced by a firm's initial response to allegations of financial misconduct. Second, Experiment 3 distinguishes between apologies that include an explicit acceptance of responsibility and apologies that reject responsibility (i.e., non-apologies). When a firm decides to apologize, the management further needs to consider what elements to include in the apology. As discussed earlier, the literature indicates that an effective apology requires the transgressing party to accept responsibility. However, apologies often do not include an explicit acceptance of responsibility (see Bentley, 2015; Eisinger, 2011). Even when the firm issues an apology, managers may reject responsibility to reduce investors' negative reactions to an apology.

Experiment 3 uses a 3 (response: apology vs. non-apology vs. denial) x 2 (guilt: guilty vs. innocent) between-subjects design. The setup of Experiment 3 is broadly in line with our other two experiments, although some different design choices were made as the experiment was run on Amazon's Mechanical Turk (MTurk) workers and was run at a different point in time. The manipulation of the response strategy was included in a WSJ article that reported on the SEC investigation (Appendix D, Figure D1). In addition, we measured our dependent variable on seven-point scales.

Participants

Participants in Experiment 3 were 224 MTurk workers. Potential participants could qualify by indicating that they (a) had previously bought or sold an individual firm's common stock or debt security and (b) had at least once evaluated a firm's performance by analyzing its financial statements.[30] In total, we collected 300 participants. We excluded 76 participants because they failed our attention check questions.[31]

Manipulation

Our apology manipulation included an apology from the CEO and a clear acceptance of responsibility: "It is true that our accounting department has made false entries in our financial reports. In the name of Obera, I sincerely apologize for the misbehavior. We take full responsibility for falsifying our financial reports and deeply regret it." (Appendix D, Figure D1). In contrast, our non-apology included an apologetic statement but also a rejection of responsibility: "Although it is not true that our accounting department has made false entries in our financial reports, I sincerely apologize in the name of Obera for any distress these events may cause. However, the claim that we falsified our financial reports is without merit and the investigation is in a very early stage." (Appendix D, Figure D2). The denial condition included only a rejection of the allegations as untrue: "It is not true that our accounting department has

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[30] In addition, we restricted participation to participants who (a) had not taken part in a pilot study, (b) had MTurk approval ratings above 95%, and (c) were located in the United States.

[31] We removed 2 participants because they did not respond with "not at all" on a seven-point scale with end-point labels "not at all" and "extremely" to the question: "To monitor quality, please respond with 'Not at all' for this question." We further removed 74 participants because they spent less than 20 seconds viewing our manipulation material (less than 15 seconds on the longer response manipulation material and less than 5 seconds on the shorter guilt manipulation material). If we include these 76 participants, the results show a response x guilt interaction of $F(2, 294) = 1.78$, $p = 0.085$ (one-tailed).

Participants received a flat rate of $1.20 for completing the study and could earn an additional $0.80 for answering two questions about the case material. There were 27 participants who at least failed one of the content questions and thus received lower pay. They took, on average, 8 minutes to complete the study, which gave them the opportunity to earn an hourly wage of $15. The time does not statistically differ between conditions $F(5, 218) = 0.37$, $p = 0.867$ (two-tailed). Participants had taken, on average, 2.48 accounting courses and 2.1 financial courses and are 38 years old. Ninety-five participants are female and 129 are male.

made false entries in our financial reports. In the name of Obera, I strongly deny any allegations of misbehavior." (Appendix D, Figure D3).

We manipulated innocent vs. guilty by showing participants a second fictitious article dated five months after the initial article. In the innocent condition, the article specified that the "SEC drops investigation into Obera's accounting practices" because "an SEC investigation did not find sufficient evidence" for accounting fraud (Appendix D, Figure D4). In the guilty condition, the article stressed that the "SEC charges Obera with accounting fraud" because "an SEC investigation found sufficient evidence" for accounting fraud (Appendix D, Figure D5).

Results

Manipulation and recall checks

To assess whether participants attended our treatment of the firm response manipulation, we asked participants to recall how the firm responded to the investigation. The participants were given three different answer choices (i.e., "The company apologized and admitted to [but denied] falsifying entries in the financial reports", "The company did not apologize and denied falsifying entries in the financial report"). Eighty-eight percent correctly indicated being in the apology (non-apology, denial) condition. To assess whether the participants attended our treatment of our guilt condition, we asked participants to recall the outcome of the investigation (i.e., The company was found innocent [guilty] of the allegations). Ninety-eight percent correctly indicated being in the guilty (innocent) condition. We included all the participants in our analysis, regardless of their answers about our manipulation.[32] In

[32] If we exclude these participants, the results show that the response x guilt interaction is significant ($F(2, 189) = 5.56$, $p = 0.002$, one-tailed). Further, when there is subsequent evidence of innocence, investors' willingness to invest is lower when the firm initially apologized ($M = -1.88$, $SD = 1.69$) compared to denying the allegations ($M = -0.30$, $SD = 0.87$; $t(189) = -4.75$, $p < 0.001$, one-tailed), lower when the firm responded with a non-apology ($M = -0.85$, $SD = 1.23$) compared to a denial ($M = -0.30$, $SD = 0.87$; $t(189) = -1.66$, $p = 0.098$, two-tailed), and lower when the firm apologized ($M = -1.88$, $SD = 1.69$) compared to a non-apology ($M = -0.85$, $SD = 1.23$; $t(189) = -3.10$, $p = 0.002$, two-tailed).

addition, we included two questions that asked the participants to recall details about the materials. First, we asked the participants about the industry the firm operates in. Ninety-seven percent of the participants correctly recalled the industry. Second, we asked the participants what type of issue the firm was accused of. All the participants correctly recalled the issue.[33]

Test of H3: Willingness to Invest

H3 predicts that evidence of guilt attenuates the positive effect of denying (versus apologizing) on investors' willingness to invest, whereas a lack of evidence increases the negative effect of apologies on investors' willingness to invest. Panel A of Table 3 presents cell size, means, and standard deviations for the preliminary, final, and change in willingness to invest. Table 3, Panel B presents an overall ANOVA model, with change in willingness to invest as the dependent variable. Results reveal that the 3 x 2 (response x guilt) interaction is significant ($F(2, 218) = 3.91$, $p = 0.011$, one-tailed), suggesting that the firm response and the evidence of guilt interact to influence change in willingness to invest. The interaction is graphically displayed in Figure 6. Panel C of Table 3 reports the simple effects tests relevant for examining the nature of this interaction.

Replicating the results from our first two experiments, the simple effects test reveals that when there is subsequent evidence of innocence, participants are significantly less willing to invest when the firm initially apologized (M = -1.48, SD = 1.78) compared to denying the allegations (M = -0.33, SD = 0.87; $t(218) = -3.60$, $p < 0.001$, one-tailed). Further, the simple

[33] If we exclude these participants, the results show that the response x guilt interaction is significant ($F(2, 212) = 3.23$, $p = 0.020$, one-tailed). When there is subsequent evidence of innocence, investors' willingness to invest is lower when the firm initially apologized (M = -1.48, SD = 1.78) compared to denying the allegations (M = -0.30, SD = 0.84; $t(212) = -3.65$, $p < 0.001$, one-tailed), lower when the firm responded with a non-apology (M = -0.93, SD = 1.28) compared to a denial (M = -0.30, SD = 0.84; $t(212) = -1.87$, $p = 0.063$, two-tailed), and lower when the firm apologized (M = -1.48, SD = 1.78) compared to a non-apology (M = -0.93, SD = 1.28; $t(212) = -1.73$, $p = 0.085$, two-tailed).

effects test reveal that participants are less willing to invest when the firm initially responded with a non-apology (M = -0.90, SD = 1.27) compared to denying the allegations (M = -0.33, SD = 0.87; $t(218)$ = -1.74, p = 0.084, two-tailed) and when the firm apologized (M = -1.48, SD = 1.78) compared to offering a non-apology (M = -0.90, SD = 1.27; $t(218)$ = -1.81, p = 0.071, two-tailed). Surprisingly, investor reactions are not significantly different when there is subsequent evidence of guilt.[34]

6. DISCUSSION AND CONCLUSION

When a firm is investigated by the SEC, it faces strategic disclosure choices that can limit the damage (Birnbach, 2014; Latham & Watkins, 2018). In this study, we conducted three experiments to investigate how investors react to corporate apologies and denials following allegations of financial misconduct. All three experiments consistently show that investors react more negatively to an apology than to a denial: they are less willing to invest when the firm issues an apology. Moreover, our results are similar regardless of whether the firm's apology is simple or full. Willingness to invest is not discernibly affected by whether or not the apology names the wrongdoing, accepts responsibility, expresses regret, promises forbearance, or explains what happened. The mere act of apologizing is more important for investors than the form of the apology.

Second, our mediation analyses reveal that the negative effects of apologies result from an increase in the attribution of responsibility for the financial misconduct. In turn, higher attributions of responsibility lower managers' credibility while increasing perceived litigation risk, adversely affecting investors' investment decisions. Third, we find no evidence for the attenuating effect of self-disclosure. Although prior research has demonstrated that self-

[34] There are no significant differences in preliminary willingness to invest across conditions $F(5, 218) = 1.69$, p = 0.138 (two-tailed). Results are inferentially identical if we run ANCOVA with final willingness to invest as the dependent variable with preliminary willingness to invest as a covariate or we if use the individual investment questions instead of the combined measure.

disclosure can be beneficial for some stakeholders (e.g., Arpan & Pompper, 2003; Claeys, 2017; Fennis & Stroebe, 2014), our study reveals it is not necessarily helpful to investors. Self-disclosure does not reduce the negative effect of an apology on investors' willingness to invest. Finally, the negative response from investors to an apology persists even after subsequent evidence substantiates a firm's guilt. Instead, an apology and a denial are perceived as equally negative. Surprisingly, investors do not penalize firms more for denying than apologizing even when additional evidence suggests the denial was incorrect.

Two points about the results are in order. First, our results suggest that investors' willingness to invest does not differ between the apology and the control conditions. Thus, managers could choose to disclose the information without any further statements. However, merely disclosing an SEC investigation and declining further comment may often not be a viable strategy. Investors or other stakeholders may simply not be satisfied with such a stance (e.g., targeting the firm through social media). Second, it is also important to discuss some ethical considerations regarding these findings. A reader of this study might conclude that the results advocate that firms should disclose a minimum of information or deny any allegations. It cannot be stressed enough that this is *not* the case. To reiterate an important statement from the crisis communication literature: "It is unethical to evade responsibility when it is known" (Coombs & Holladay, 2008, p. 256). It also would be unethical to deny responsibility when the firm has engaged in dishonest behavior. In contrast, once a firm has discovered financial misconduct, it should voluntarily disclose this information. If they have evidence of misconduct, they should apologize for the misdeed. What our results underscore is that the damage from misconduct cannot easily be repaired.

This study has several limitations that could be explored in future research. First, it could be argued that apologizing fundamentally changes the underlying facts and circumstances of the event; that is, a denial preserves uncertainty about whether the firm engaged in financial

misconduct, while an apology makes this a sure thing. If this is indeed the case, investors may react differently because of differences in the actual likelihood of accounting fraud and not because of the firm's different response strategies. However, apologies also do not reveal guilt with certainty; they just increase its likelihood. To meaningfully capture the idea of an apology, any operationalization of an apology must include an acceptance of responsibility—a core element of an apology, but one that indeed also suggests guilt. Some belief revision about the underlying facts and circumstances may thus be unavoidable when studying these different response strategies because of their incontrovertible link with responsibility.

Second, the current study focused on a specific type of event: an SEC investigation for misconduct in financial reporting. We did not include other types of SEC investigations or other types of negative events that might elicit different reactions from investors. Our study differs in this respect from prior literature that has examined crises and corporate communication. Unlike the typical event studied in the crisis communication literature, in our setting, the firm's culpability is uncertain (even after an investigation and the SEC decides to file an enforcement action or not). Future research can explore if this uncertainty reduces the efficacy of apologies and/or self-disclosure as a disclosure strategy. The current study cannot rule out the possibility that investors perceive (self-disclosed) apologies more favorably if they are entirely voluntary, unprompted by external pressures, or potential third-party disclosure.

Third, future research could explore other boundary effects of our results by varying the severity and circumstances of the allegations. For example, do the effects hold for other forms of financial misconduct (e.g., misappropriation of assets), for investigations that do not directly affect investors (e.g., intentional environmental pollution), or for investigations that directly affect consumers (e.g., product recalls)? Do these effects endure over time, or is investors' negative response to apologies just a short-term effect (cf. Mercer, 2004)?

Fourth, we used Prolific and MTurk participants as a proxy for nonprofessional investors. Future research could examine how the firm's response affects more sophisticated market participants. Finally, investors' reactions to apologies might be different across cultures. Future research could investigate how investors with different cultural values react to apologies.

APPENDIX A: Material for Experiment 1

FIGURE A1
Experiment Manipulation: Full Apology by Management

FOR IMMEDIATE RELEASE
June 11, 2021

FOOBERA DISCLOSES SEC INVESTIGATION
CHICAGO, Illinois, June 11, 2021 – Foobera, Inc. (Nasdaq: FO) today disclosed that the Securities and Exchange Commission (the "SEC") is conducting an investigation of the Company related to its accounting procedures and internal controls.

Foobera's CEO Dan White said: "We received a subpoena from the SEC associated with an investigation into our accounting practices. The investigation relates to our revenue recognition, involving $3 million in annual income.

In the name of Foobera, I sincerely apologize for the occurrence of issues related to our revenue recognition. We take full responsibility for the incorrect accounting practices that our accounting department used to recognize revenue. Our internal accounting controls were not effective in preventing these incorrect practices due to a lack of appropriate segregation of duties. I regret that this has happened on my watch. We will do everything to ensure this will not happen again in the future.

We are fully cooperating with the SEC and cannot predict the timing of completion or outcome of the SEC's inquiry at this time."

About the Company
Foobera, Inc. is a manufacturer and marketer of specialty food products for the retail and foodservice channels.

TABLE A1 Apology Elements		
Elements	**Full apology**	**Full denial**
Apologetic statement	In the name of Foobera, I sincerely apologize for the occurrence of issues related to our revenue recognition.	In the name of Foobera, I categorically deny the occurrence of issues related to our revenue recognition.
Acceptance of responsibility	We take full responsibility for the incorrect accounting practices that our accounting department used to recognize revenue.	We bear no responsibility in this matter. Our accounting department has never used any incorrect accounting practices to recognize revenue.
Explanation	Our internal accounting controls were not effective in preventing these incorrect practices due to a lack of appropriate segregation of duties.	Our internal accounting controls are highly effective in preventing such incorrect practices, among others thanks to our appropriate segregation of duties.
Expression of regret	I regret that this has happened on my watch.	No such things have ever happened on my watch.
Promise of forbearance	We will do everything to ensure this will not happen again in the future.	We will continue to ensure this will never happen in the future either.
This table presents elements that we used to operationalize our full apology and full denial manipulation. The basic apology and denial conditions only include the apologetic statement.		

APPENDIX B:

TABLE B1
Questions Used To Measure Mediators

	Question
Responsibility	
Q1.	I believe that Foobera's CEO Dan White is responsible for the issue.
Q2.	I believe that Foobera's CEO Dan White is to be blamed for the issue.
Cronbach's alpha	
Exp. 1	0.82
Exp. 2	0.83
Credibility	
Q1.	I believe that Foobera's management is trustworthy.
Q2.	I believe that Foobera's management is competent.
Cronbach's alpha	
Exp. 1	0.80
Exp. 2	0.77
Litigation Risk	
Q1.	I believe it is likely that other investors will file a lawsuit against Foobera.
Q2.	I believe that Foobera is liable for any potential damages caused by the events.
Q3.	I believe it is likely that a lawsuit against Foobera would be successful.
Cronbach's alpha	
Exp. 1	0.74
Exp. 2	0.74

This table presents the questions and Cronbach's alpha scores for our mediation variables. Participants responded to all questions on seven-point scales.

APPENDIX C: Material For Experiment 2

FIGURE C1
Experiment Manipulation: Apology By The Firm Is Given As Self-Disclosure

FOR IMMEDIATE RELEASE
June 11, 2021

FOOBERA VOLUNTARILY DISCLOSES SEC INVESTIGATION
CHICAGO, Illinois, June 11, 2021 – Foobera, Inc. (Nasdaq: FO) today voluntarily disclosed that the Securities and Exchange Commission (the "SEC") is conducting an investigation of the Company related to its accounting procedures and internal controls.

Foobera's CEO Dan White self-disclosed: "We received a subpoena from the SEC associated with an investigation into our accounting practices. The investigation relates to our revenue recognition, involving $3 million in annual income.

In the name of Foobera, I sincerely apologize for the occurrence of issues related to our revenue recognition. We take full responsibility for the incorrect accounting practices that our accounting department used to recognize revenue. Our internal accounting controls were not effective in preventing these incorrect practices due to a lack of appropriate segregation of duties. I regret that this has happened on my watch. We will do everything to ensure this will not happen again in the future."

The Company further announced that it will be cooperating with the SEC and cannot predict the timing of completion or outcome of the SEC's inquiry at this time.

About the Company
Foobera, Inc. is a manufacturer and marketer of specialty food products for the retail and foodservice channels.

FIGURE C2
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Self-Disclosure

THE WALL STREET JOURNAL.

U.S. Edition | June 11, 2021 | Today's Paper | Video

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FOOBERA DISCLOSES SEC INVESTIGATION

Foobera has disclosed that the Securities and Exchange Commission (the "SEC") is conducting an investigation of the Company related to its accounting procedures and internal controls.

Foobera reported annual results last month and there were no big surprises; those had only come earlier today when the company self-disclosed the investigation.

In a statement, the company voluntarily disclosed that the investigation was taking place.

FIGURE C3
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Third-Party Disclosure

THE WALL STREET JOURNAL.

U.S. Edition | June 11, 2021 | Today's Paper | Video

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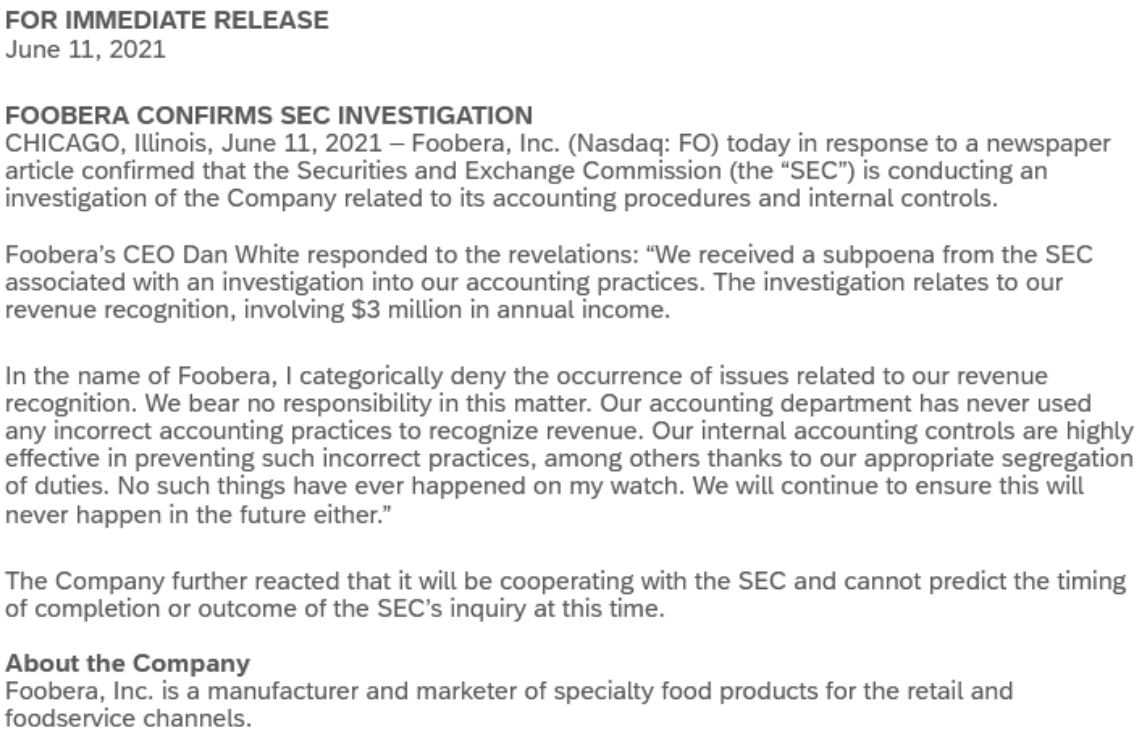
SOURCE REVEALS SEC INVESTIGATION AT FOOBERA

A source close to the authorities has revealed that the Securities and Exchange Commission (the "SEC") is conducting an investigation of the Company related to its accounting procedures and internal controls.

Foobera reported annual results last month and there were no big surprises; those had only come earlier today when a source told The Wall Street Journal about the investigation.

In response to media inquiries, the company confirmed that the investigation was taking place.

FIGURE C4
Experiment manipulation: Denial by firm is given in responds to third-party disclosure



FOR IMMEDIATE RELEASE
June 11, 2021

FOOBERA CONFIRMS SEC INVESTIGATION
CHICAGO, Illinois, June 11, 2021 – Foobera, Inc. (Nasdaq: FO) today in response to a newspaper article confirmed that the Securities and Exchange Commission (the "SEC") is conducting an investigation of the Company related to its accounting procedures and internal controls.

Foobera's CEO Dan White responded to the revelations: "We received a subpoena from the SEC associated with an investigation into our accounting practices. The investigation relates to our revenue recognition, involving $3 million in annual income.

In the name of Foobera, I categorically deny the occurrence of issues related to our revenue recognition. We bear no responsibility in this matter. Our accounting department has never used any incorrect accounting practices to recognize revenue. Our internal accounting controls are highly effective in preventing such incorrect practices, among others thanks to our appropriate segregation of duties. No such things have ever happened on my watch. We will continue to ensure this will never happen in the future either."

The Company further reacted that it will be cooperating with the SEC and cannot predict the timing of completion or outcome of the SEC's inquiry at this time.

About the Company
Foobera, Inc. is a manufacturer and marketer of specialty food products for the retail and foodservice channels.

APPENDIX D: Material For Experiment 3

FIGURE D1
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Apology (i.e., Apology including acceptance of responsibility)

THE WALL STREET JOURNAL.

U.S. Edition | September 22, 2018 | Today's Paper | Video

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SEC opens probe into Obera's accounting practices

The investigation follows allegations of accounting fraud involving $3 million in annual income.

The U.S. Securities and Exchange Commission is investigating Obera's revenue recognition practices over allegations of falsifying accounting entries, involving $3 million in annual income.

SEC officials have asked the company to provide documents and other information relating to its accounting for its business.

In a statement on Wednesday CEO Dan White apologized that the company had misled investors: "It is true that our accounting department has made false entries in our financial reports. In the name of Obera, I sincerely apologize for the misbehavior. We take full responsibility for falsifying our financial reports and deeply regret it. Our CFO Scott Wilson and his team have used accounting practices that do not meet ethical and legal and accounting requirements."

He further added: "We will proceed with the highest possible transparency and do everything to ensure this matter is resolved quickly."

FIGURE D2
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Non-Apology (i.e., Apology excluding acceptance of responsibility)

THE WALL STREET JOURNAL.

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SEC opens probe into Obera's accounting practices

The investigation follows allegations of accounting fraud involving $3 million in annual income.

The U.S. Securities and Exchange Commission is investigating Obera's revenue recognition practices over allegations of falsifying accounting entries, involving $3 million in annual income.

SEC officials have asked the company to provide documents and other information relating to its accounting for its business.

In a statement on Wednesday CEO Dan White apologized to the investors: "Although it is not true that our accounting department has made false entries in our financial reports, I sincerely apologize in the name of Obera for any distress these events may cause. However, the claim that we falsified our financial reports is without merit and the investigation in a very early stage. Our CFO Scott Wilson and his team have always used accounting practices that meet all ethical and legal and accounting requirements."

He further added: "We will proceed with the highest possible transparency and do everything to ensure this matter is resolved quickly."

FIGURE D3
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Denial

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SEC opens probe into Obera's accounting practices

The investigation follows allegations of accounting fraud involving $3 million in annual income.

The U.S. Securities and Exchange Commission is investigating Obera's revenue recognition practices over allegations of falsifying accounting entries, involving $3 million in annual income.

SEC officials have asked the company to provide documents and other information relating to its accounting for its business.

In a statement on Wednesday CEO Dan White denied that the company had misled investors: "It is not true that our accounting department has made false entries in our financial reports. In the name of Obera, I strongly deny any allegations of misbehavior. The claim that we falsified our financial reports is without merit and the investigation in a very early stage. Our CFO Scott Wilson and his team have used accounting practices that meet all ethical and legal and accounting requirements."

He further added: "We will proceed with the highest possible transparency and do everything to ensure this matter is resolved quickly."

FIGURE D4
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Innocence

THE WALL STREET JOURNAL.

U.S. Edition | February 26, 2019 | Today's Paper | Video

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SEC drops investigation into Obera's accounting practices

An SEC investigation did not find sufficient evidence that Obera violated accounting rules.

The U.S. Securities and Exchange Commission began an investigation in 2018 following allegations that Obera violated accounting rules and misstated company earnings. The SEC today concluded its investigation into Obera's accounting practices without taking enforcement action.

An SEC investigation did not find sufficient evidence that Obera improperly accounted for $3 million in annual income. Based on the evidence, the SEC has concluded that the company did not materially misstate its consolidated earnings in corporate filings.

FIGURE D5
Experiment Manipulation: Fictitious Newspaper Article Used To Manipulate Guilty

THE WALL STREET JOURNAL.

U.S. Edition | February 26, 2019 | Today's Paper | Video

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SEC charges Obera with accounting fraud

An SEC investigation found sufficient evidence that Obera violated accounting rules.

The U.S. Securities and Exchange Commission began an investigation in 2018 following allegations that Obera violated accounting rules and misstated company earnings. The SEC today filed charges against Obera for falsifying accounting entries.

An SEC investigation found sufficient evidence that Obera improperly accounted for $3 million in annual income. Based on the evidence, the SEC has concluded that the company materially misstated its consolidated earnings in corporate filings.

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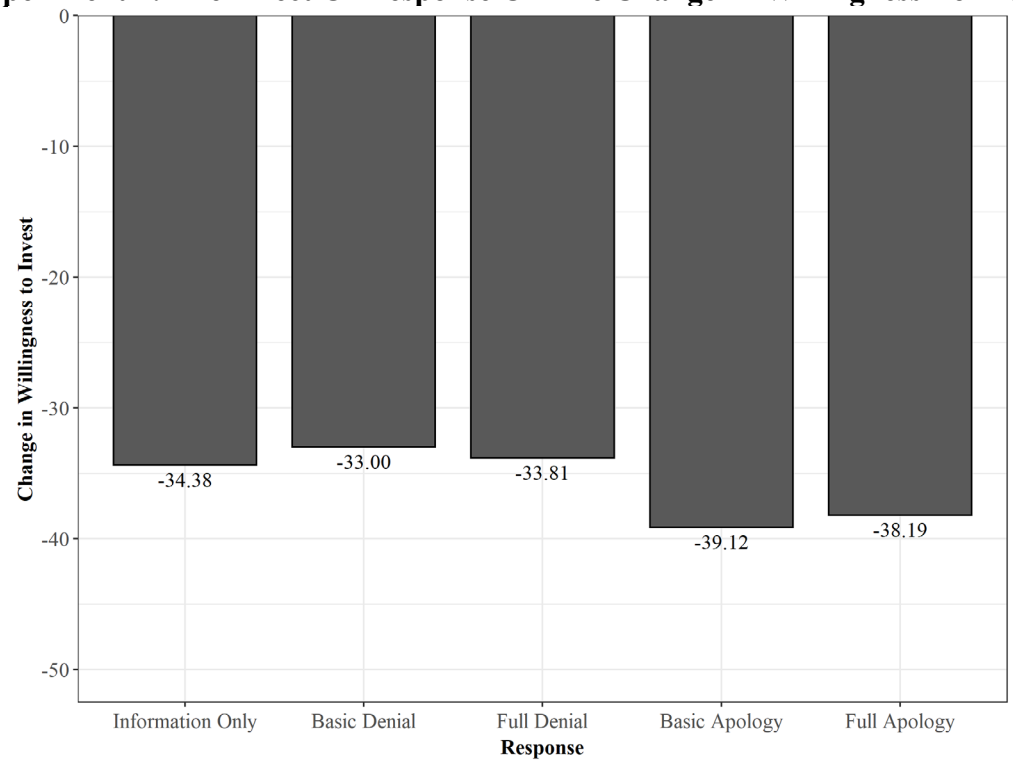
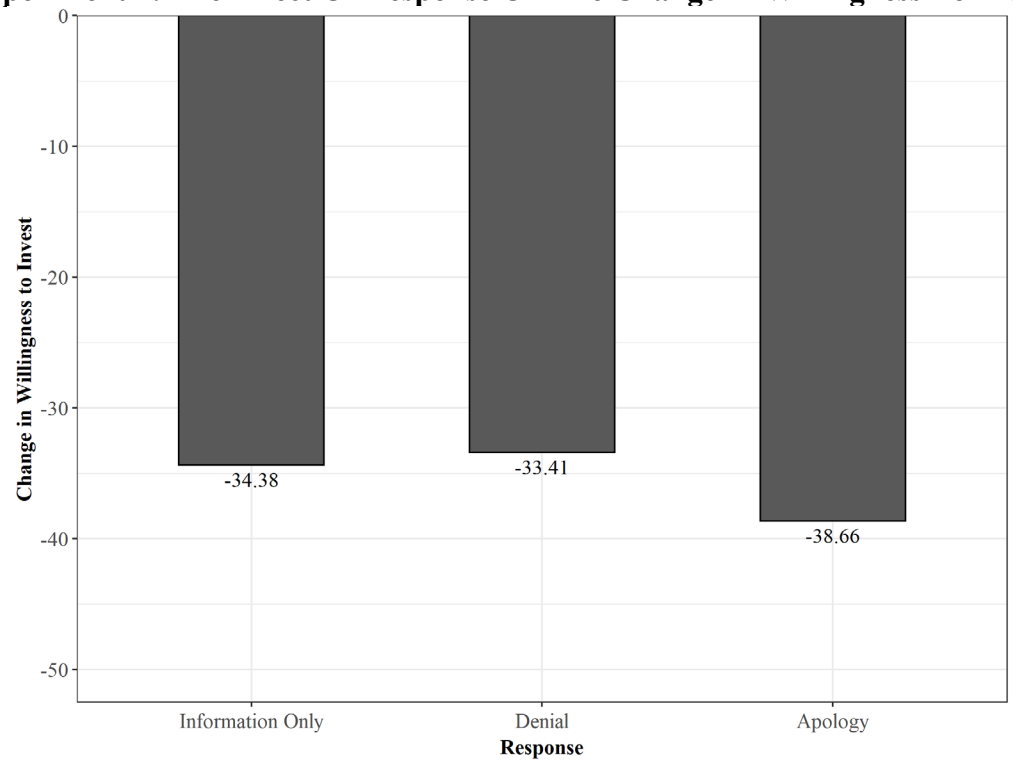
FIGURE 1
Experiment 1: The Effect Of Response On The Change In Willingness To Invest



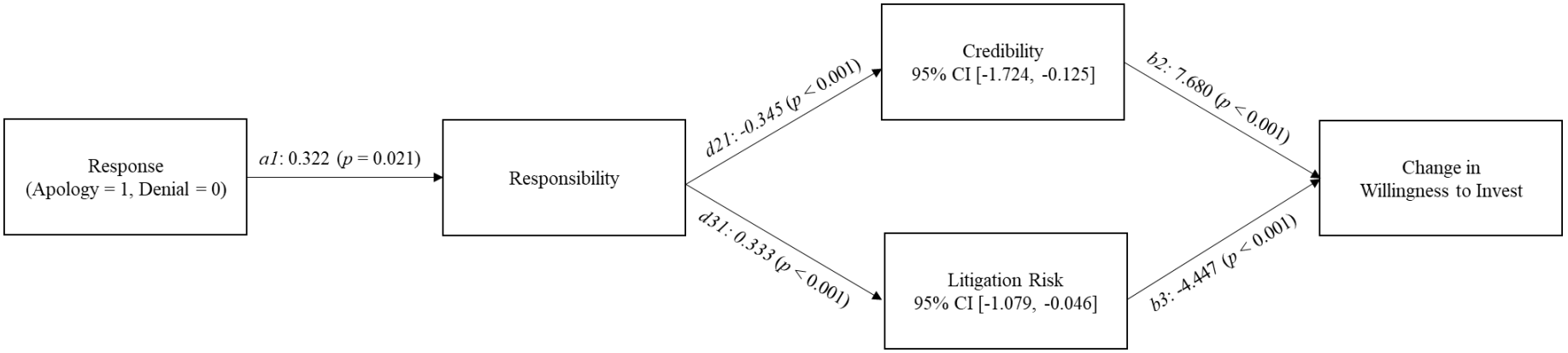
This figure shows the observed mean values for the change in participants' willingness to invest for the four treatment conditions and the control condition (i.e., information only). Negative values indicate a decrease in the willingness to invest after exposure to our manipulation. Panel A of Table 1 presents the descriptive statistics for the change in participants' willingness to invest.

FIGURE 2
Experiment 1: The Effect Of Response On The Change In Willingness To Invest



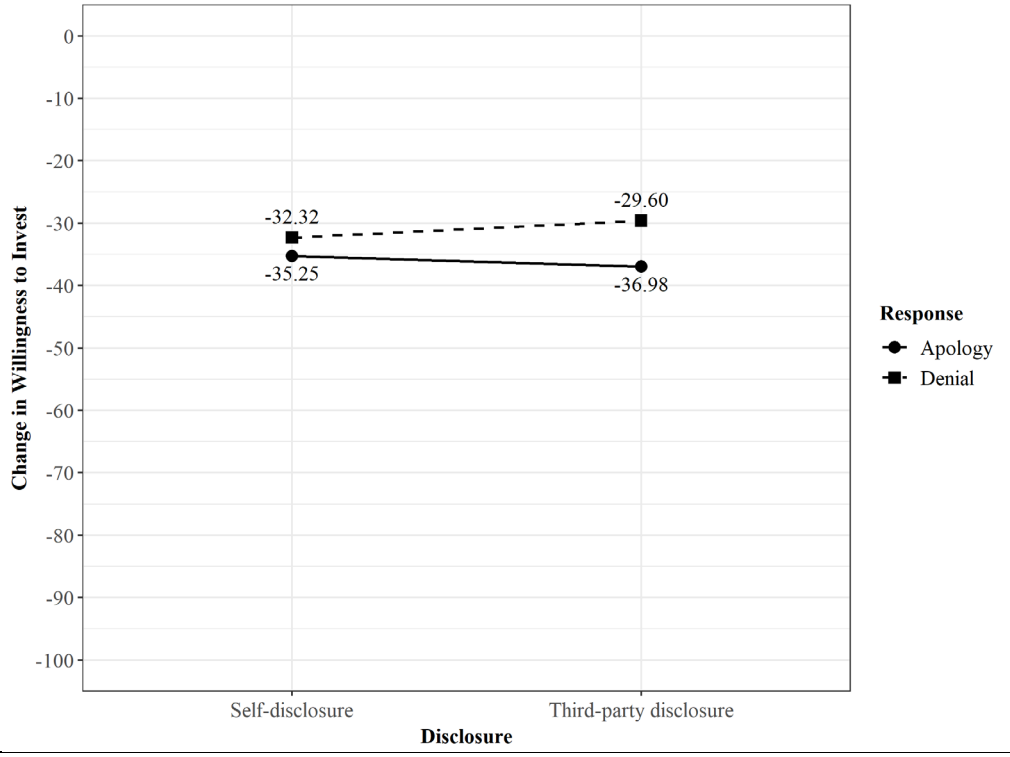
This figure shows the observed mean values for the participants' change in willingness to invest for the treatment conditions combining full and basic apology (denial) and the control condition (i.e., information only). Negative values indicate a decrease in the willingness to invest after exposure to our manipulation. Panel B of Table 1 presents the descriptive statistics for the change in participants' willingness to invest.

FIGURE 3
Experiment 1: Mediation Analysis Results



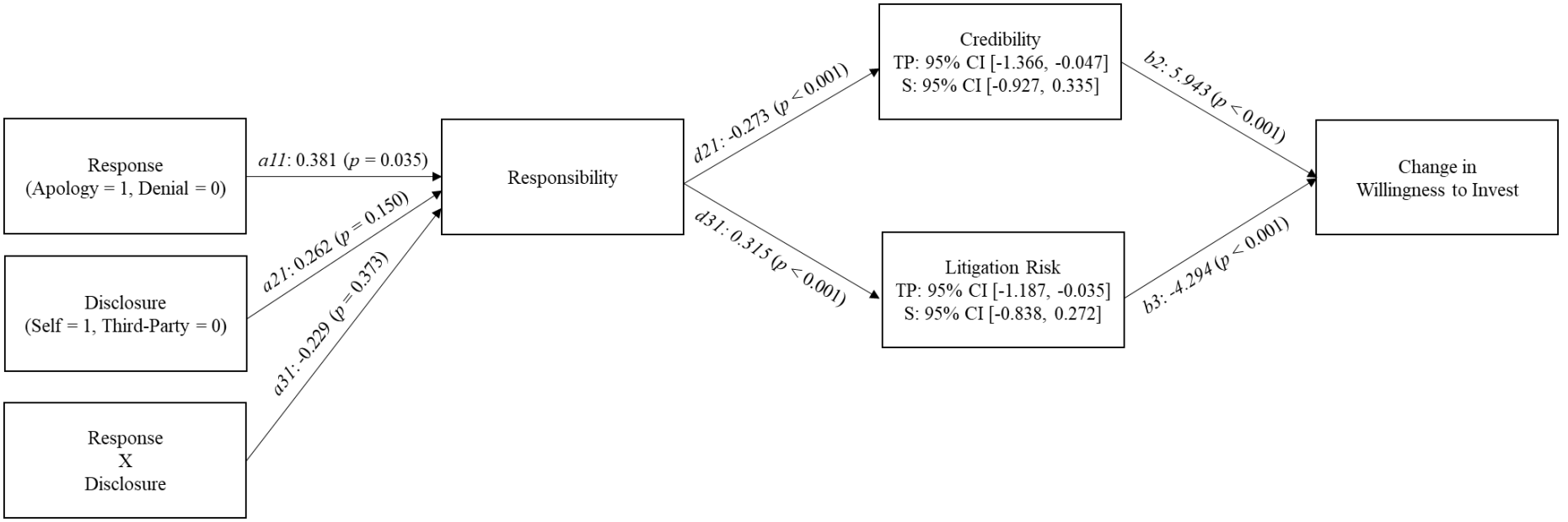
This figure illustrates the mediation analysis using SEM. Not shown but included in the model are the direct effect between response and change in willingness to invest, the indirect effects between response and change in willingness to invest (i.e., response → responsibility→ change in willingness to invest, response → credibility→ change in willingness to invest, response → litigation risk→ change in willingness to invest), and the covariances between the error terms of credibility and litigation risk. The path coefficients are unstandardized. The 95% confidence intervals of the indirect effects that pass through the mediators in sequence were computed using 10,000 bootstrapped re-samples of the data from Experiment 1 and are displayed below the variable names. All *p*-values are two-tailed. Panel B of Table 1 presents the descriptive statistics for responsibility, credibility, litigation risk, and change in participants' willingness to invest.

FIGURE 4
Experiment 2: The Effect Of Response And Disclosure On The Change In Willingness To Invest



This figure shows the observed mean values for the participants' change in willingness to invest. Negative values indicate a decrease in the willingness to invest after exposure to our manipulation. Panel A of Table 2 presents the descriptive statistics for the change in participants' willingness to invest.

FIGURE 5
Experiment 2: Mediation Analysis Results



This figure illustrates the mediation analysis using SEM. Not displayed but included in the model are the direct effect between response and change in willingness, the indirect effects between response and change in willingness to invest (i.e., response → responsibility→ change in willingness to invest; response → credibility→ change in willingness to invest; response → litigation risk→ change in willingness to invest). The path coefficients are unstandardized. The 95% confidence intervals of the conditional indirect effects that pass through the mediators in sequence were computed using 10,000 bootstrapped re-samples of the data from Experiment 2 and are displayed below the variable names (S = self-disclosure, TP = third-party disclosure). The bootstrapped confidence interval for the difference in the conditional indirect effects through responsibility and credibility 95% CI [-0.433, 1.318] includes zero. The bootstrapped confidence interval for the difference in the conditional indirect effects through responsibility and litigation risk 95% CI [-0.399, 1.105] includes zero. All *p*-values are two-tailed. Panel A of Table 2 presents the descriptive statistics for responsibility, credibility, litigation risk, and change in participants' willingness to invest.

FIGURE 6
The Effect of Response and Guilt on Change in Willingness to Invest

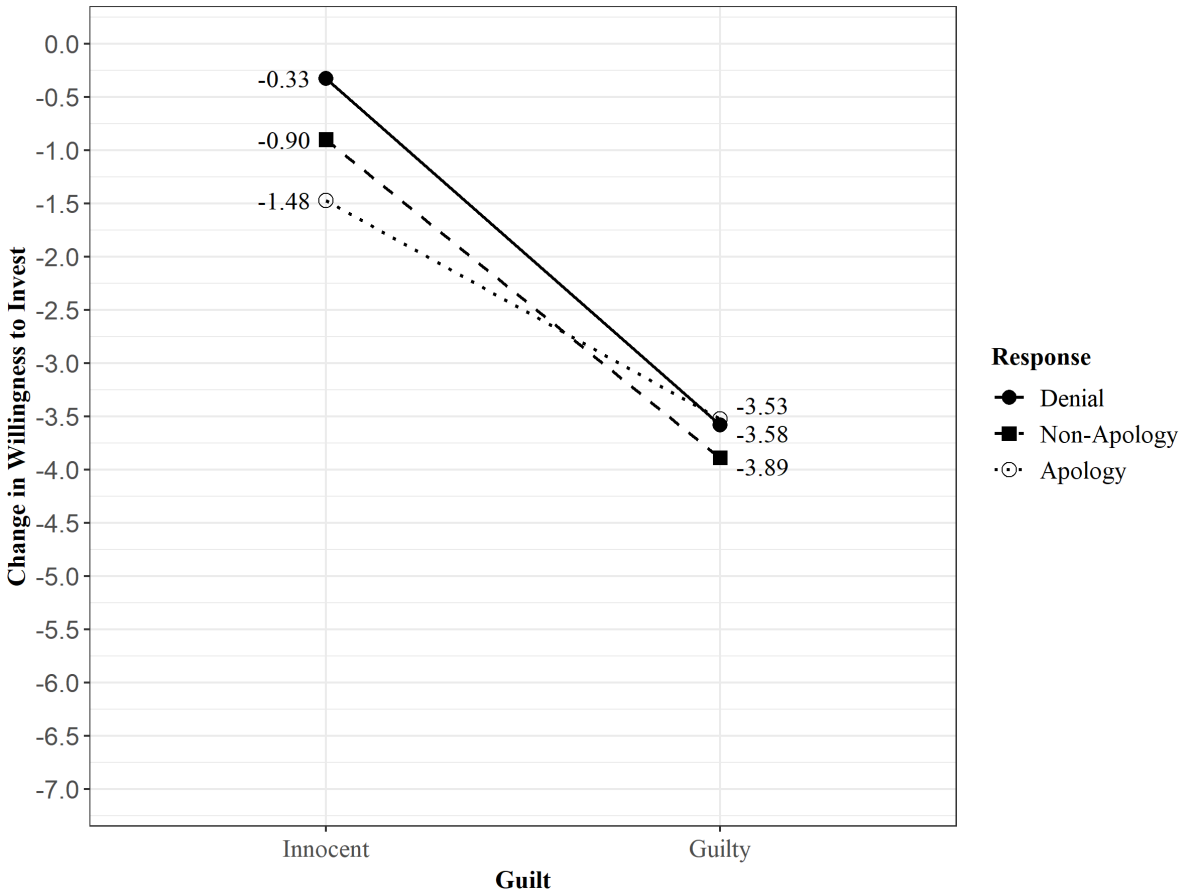


Figure 6 shows the observed mean values for participants' change in willingness to invest. Negative values indicate a decrease in willingness to invest after exposure to our manipulation. Table 3, Panel A presents descriptive statistics for the change in participants' willingness to invest.

TABLE 1
Experiment 1: How Response Affect The Change In Willingness To Invest

Panel A: Preliminary, Final, and Change in Willingness to Invest, Mean (Standard Deviation), n = 400

Experimental Condition

	Control (n = 80)	Basic Denial (n = 80)	Full Denial (n = 80)	Basic Apology (n = 80)	Full Apology (n = 80)
Preliminary Willingness to Invest	67.81 (18.16)	64.06 (21.70)	68.12 (16.92)	71.75 (14.08)	67.12 (21.46)
Final Willingness to Invest	33.44 (22.43)	31.06 (24.68)	34.31 (26.39)	32.62 (22.63)	28.94 (25.48)
Change in Willingness to Invest	-34.38 (20.80)	-33.00 (21.33)	-33.81 (24.91)	-39.12 (24.50)	-38.19 (24.76)

Panel B: Change in Willingness to Invest, Responsibility, Credibility, and Litigation Risk, Mean (Standard Deviation), n = 400

Experimental Condition

	Control (n = 80)	Denial (n = 160)	Apology (n = 160)
Change in Willingness to Invest	-34.38 (20.80)	-33.41 (23.12)	-38.66 (24.56)
Responsibility	4.46 (1.00)	4.51 (1.31)	4.83 (1.19)
Credibility	3.78 (1.18)	4.04 (1.21)	3.67 (1.33)
Litigation Risk	4.70 (0.92)	4.50 (1.08)	5.01 (1.13)

(continued on next page)

TABLE 1 (continued)

Panel C. Planned Contrast Test for the Change in the Willingness to Invest

Contrast	Estimate	t-statistic	p-value	CI
Apology vs. Denial	-2.62	-1.96	0.025[a]	-4.831, -0.419[a]
Full Denial vs Basic Denial	-0.41	-0.22	0.830[b]	-4.127, 3.314[b]
Full Apology vs. Basic Apology	0.47	0.25	0.804[b]	-3.252, 4.189[b]

Panel D. Comparison of Response Conditions to Control Condition for the Change in the Willingness to Invest

	Estimate	t-statistic	p-value	CI
Basic Denial vs. Control	1.38	0.37	0.710[b]	-5.877, 8.627[b]
Full Denial vs. Control	0.56	0.15	0.879[b]	-6.689, 7.814[b]
Basic Apology vs. Control	-4.75	-1.29	0.199[b]	-12.002, 2.502[b]
Full Apology vs. Control	-3.81	-1.03	0.302[b]	-11.064, 3.439[b]

This table presents the descriptive statistics, a planned contrast to compare the treatment conditions, and a comparison of the treatment conditions to the control condition. The dependent variable, change in willingness to invest, is the final willingness to invest minus the preliminary willingness to invest. The contrast weights to compare apology and denial conditions for the cells basic denial, full denial, basic apology, full apology are as follows: contrast 1 (-1, -1, 1, 1), contrast 2 (-1, 1, 0, 0), contrast 3 (0, 0, -1, 1). [a,b] designate one-tailed and two-tailed *p*-values or 90% and 95% confidence intervals, respectively. One-tailed values are reported for directional predictions.

TABLE 2
Experiment 2: How Response Affect The Change In Willingness To Invest

Panel A: Preliminary, Final, and Change in Willingness to Invest, Responsibility, Credibility, and Litigation Risk, Mean (Standard Deviation), n = 400

	Experimental Condition			
	Apology/ Self-disclosure (n=100)	Apology/ Third-party disclosure (n=101)	Denial/ Self-disclosure (n=99)	Denial/ Third-party disclosure (n=100)
Preliminary Willingness to Invest	71.65 (15.70)	68.07 (14.93)	70.66 (16.88)	71.30 (17.33)
Final Willingness to Invest	36.40 (22.55)	31.09 (20.91)	38.33 (24.03)	41.70 (24.60)
Change in Willingness to Invest	-35.25 (24.00)	-36.98 (21.71)	-32.32 (21.66)	-29.60 (23.01)
Responsibility	4.39 (1.33)	4.36 (1.27)	4.24 (1.31)	3.98 (1.26)
Credibility	3.64 (1.31)	3.64 (1.27)	3.88 (1.27)	3.99 (1.14)
Litigation Risk	5.15 (1.13)	5.12 (0.91)	4.80 (1.08)	4.64 (1.04)

Panel B: ANOVA Model of the Change in Willingness to Invest

Source of Variation	SS	df	MS	F-Statistic	p-value
Response	2655.71	1	2655.71	5.19	0.012[a]
Disclosure	24.65	1	24.65	0.05	0.826[b]
Response x Disclosure	495.80	1	495.80	0.97	0.163[a]
Error	202572.37	396	511.55		

This table presents the descriptive statistics and the ANOVA model for the participants' change in willingness to invest. The dependent variable, change in willingness to invest, is the final willingness to invest minus the preliminary willingness to invest. [a,b] designate one-tailed and two-tailed *p*-values, respectively. One-tailed values are reported for directional predictions.

TABLE 3

How Response and Guilt affect Change in Willingness to Invest

Panel A: Preliminary, Final, and Change in Willingness to Invest, Mean (Standard Deviation), n = 224

Experimental Condition

	Apology/ Guilty (n=37)	Apology/ Innocent (n=42)	Non-Apology/ Guilty (n=37)	Non-Apology/ Innocent (n=36)	Denial/ Guilty (n=37)	Denial/ Innocent (n=35)
Preliminary Willingness to Invest	5.32 (1.09)	5.90 (0.89)	5.65 (0.97)	5.64 (0.79)	5.65 (1.24)	5.84 (0.67)
Final Willingness to Invest	1.80 (1.06)	4.43 (1.54)	1.76 (0.92)	4.74 (1.49)	2.07 (1.28)	5.51 (1.11)
Change in Willingness to Invest	-3.53 (1.37)	-1.48 (1.78)	-3.89 (1.13)	-0.90 (1.27)	-3.58 (1.64)	-0.33 (0.87)

Panel B: ANOVA Model of Change in Willingness to Invest

Source of Variation	SS	df	MS	F-Statistic	p-value
Response	12.45	2	6.22	3.21	0.021[a]
Guilt	426.48	1	426.48	219.71	<0.001[b]
Response x Guilt	15.20	2	7.60	3.91	0.011[a]
Error	423.15	218	1.94		

Panel C: Simple Effects Test for Change in Willingness to Invest

Source of Variation		Mean diff.	t-statistic	p-value	CI
Apology vs. Denial	Guilty	0.05	0.17	0.433[a]	-0.481, 0.589[a]
	Innocent	-1.15	-3.60	<0.001[a]	-1.674, -0.621[a]
Apology vs. Non-Apology	Guilty	0.36	1.13	0.261[b]	-0.274, 1.003[b]
	Innocent	-0.57	-1.81	0.071[b]	-1.197, 0.050[b]
Non-Apology vs. Denial	Guilty	-0.31	-0.96	0.338[b]	-0.949, 0.328[b]
	Innocent	-0.57	-1.74	0.084[b]	-1.226, 0.078[b]
Guilty vs. Innocent	Apology	-2.05	-6.53	<0.001[a]	-2.570, -1.532[a]
	Non-Apology	-2.99	-9.17	<0.001[b]	-3.632, -2.346[b]
	Denial	-3.25	-9.90	<0.001[a]	-3.795, -2.710[a]

This table presents the descriptive statistics, the ANOVA model, and the simple effects test for the participants' change in willingness to invest. The dependent variable, change in willingness to invest, is the final willingness to invest minus the preliminary willingness to invest. [a,b] designate one-tailed and two-tailed *p*-values or 90% and 95% confidence intervals, respectively. One-tailed values are reported for directional predictions.