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ORIGINAL PAPER

"Just Say You're Sorry": Avoidance and Revenge Behavior in Response to Organizations Apologizing for Fraud

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Abstract

Using two experiments, I examine how apologizing for fraud influences investor's avoidance (selling shares) and revenge (litigation) behavior. Investors in experiment one report how many shares they would sell and how likely they would be to pursue legal punishment after discovering fraud has occurred in an organization they are currently invested in and subsequently reading about management's response to the fraud. I manipulate the nature of fraud as fraudulent financial reporting (misreporting) or asset misappropriation (embezzlement). I also manipulate whether management apologizes, scapegoats responsibility, or remains silent after the fraud. Results show avoidance and revenge behavior is more negative after misreporting fraud. Data suggest that this difference may be partially attributable to the underlying moral norm that is violated. Specifically, misreporting is primarily a moral violation of deception, whereas embezzlement is primarily a moral violation of stealing. Results also show differential investor reactions depending on the type of fraud and management's response. For misreporting, revenge behavior is higher when management apologizes, but there is no effect on avoidance behavior. For embezzlement, avoidance behavior is reduced when the organization apologizes, but revenge behavior is unaffected. In experiment two, I replicate the misreporting condition from experiment one and manipulate apology sincerity. Results show that apology sincerity is positively associated with revenge behavior. Results of these two experiments extend both accounting and trust repair research by emphasizing the importance of disentangling moral integrity-based trust violations and that the adage of "just say you're sorry" is helpful in some situations and harmful in others.

Keywords Apology · Crisis management · Fraud · Investor's behavior · Misstatement · Moral integrity · Trust repair

Introduction

When a significant fraud within an organization is revealed, investors often react negatively (Amiram et al., 2018; Brown & Moser, 2017; Heminway, 2007; Karpoff et al., 2008a, 2008b). However, how the organization *immediately* responds to the fraud can also impact investor reactions. In this study, I examine how investor reactions are jointly impacted by fraud and the organization's communication strategy after the fraud occurs. Specifically, I apply crisis management and organizational trust theories to the context of two different types of fraud—misreporting and embezzlement—and three different organization responses—apology, scapegoating, and remaining silent. I examine two types of investor responses following a fraud: (1) avoidance behavior (i.e., selling shares) and (2) revenge behavior (i.e., litigation).

Prior research documents significant decreases in firm value attributable to fraud, with losses in stock market value exceeding those penalties imposed by the legal system at a rate of 7.5 times (Karpoff et al., 2008a). Prior research has looked at the institutional changes organizations make following a misreporting fraud to repair reputation with investors and other stakeholders (Chakravarthy et al., 2014). However, these are long-term changes that take time, and firms need an immediate response to slow the negative fallout related to the fraud. Additionally, empirical findings on investors' reactions to and organization responses for fraud have focused almost exclusively on misreporting fraud (e.g., Amiram et al., 2018) with no research I am aware of focused exclusively on investor reactions to embezzlement fraud. Thus, it is unclear if investors' reactions to different types of fraud are similar or asymmetrical.

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It is also unclear whether an apology will be helpful or harmful to restoring trust and mitigating the investor's malicious behavior towards the firm after a fraud. While crisis management theory and trust repair literature debate about the appropriateness of an apology for fraud (Coombs, 2007; Fuoli et al., 2017), there is no evidence that firms have adopted this strategy (Racine et al., 2020). This is surprising because one does not have to search hard to find apologies from athletes, politicians, and CEOs for other organization misbehavior (like forcibly removing a customer from an airplane). To add to this, a business week article at the time of the Enron scandal noted that organizations go-to response was to be silent or deny responsibility when the smarter approach may be to apologize (France, 2002), suggesting that not much has changed in the past 18 years concerning how organizations respond to corporate fraud.

Thus, this paper aims to provide evidence about apologies corrective or damaging influence on investor behavior after fraud. First, differences in investor behavior after a misreporting versus embezzlement fraud are examined. Next, the impact of apologies after either type of fraud is studied, guided by theory and research from public relations and organizational behavior. Finally, the level of sincerity in an apology is tested to see how it affects investor behavior. Given the lack of available data on embezzlement frauds and organizations' non-use of apology after a fraud, I leverage the experimental method's power to design controlled contexts and measure relevant dependent variables.

Hypothesis Development

Organizational Fraud and Investor Punishing Behavior

Trust is a necessary component in order for financial markets to function. Drawing from organizational science, trust is defined as "the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998) and "the extent to which a person is confident in, and willing to act on the basis of, the words, actions and decisions of another" (Mcallister, 1995). Trust within the principle-agent relationship of investors and managers allows the flow of capital from an investor to manager and information in financial reports from manager to investor (Beyer et al., 2010; Healy & Palepu, 2001). More plainly, investors make themselves vulnerable by giving capital to managers with the expectation that management will effectively use their money for legitimate purposes (i.e., not shirk or skim profits) and will truthfully present updates about the financial performance of the organization, all the while following the rules and regulations of financial reporting (e.g., GAAP). Hence, management establishes trust with investors based on their ability to align their behavior with investor's beliefs and expectations that management will efficiently use their invested capital and will provide timely and accurate updates on performance.[1]

When management commits fraud, they violate an investor's trust. When investors' trust has been violated, they respond in ways that seek to punish fraudsters. A multitude of research from the fields of accounting, finance, and law has established that organizations guilty of falsifying their financial records suffer severe repercussions (Amiram et al., 2018). This includes adverse effects on the organization's capital structure resulting from drops in market value and increased cost of capital (Amiram et al., 2018; Bonini & Boraschi, 2011; Karpoff et al., 2008a) and costs associated with lawsuits brought by both individuals and regulators (Brown & Moser, 2017). Management also faces direct consequences, including losing their job, civil litigation by the SEC, and in some cases serving jail time (Karpoff et al., 2008b).

A tangential line of research looks at employee (Aquino et al., 2001, 2006) and customer (Bowen et al., 2017; Grégoire et al., 2009; Lee et al., 2013) responses to perceived injustices and notes that victims engage in two types of negative behaviors, avoidance and revenge. Adopting an avoidance or revenge response by the victim is evidence that they are not forgiving or reconciling with the transgressor. A desire for avoidance is simply the victim severing the relationship with the transgressor, withdrawing themselves from future interactions (Mccullough et al., 1998). On the other hand, a desire for revenge is defined as the need to punish and/or cause harm to transgressors (Bechwati & Morrin, 2003; Grégoire & Fisher, 2006; Jackson et al., 2019). Revenge can be motivated by retributive desires to punish the transgressor and also to deter similar behavior in the future (Jackson et al., 2019). Importantly, avoidance and revenge are not mutually exclusive.

I posit that selling shares can be seen as a costless avoidance-motivated behavior, whereas litigation is a costly revenge-motivated behavior. Selling shares is a passive act of punishment performed indirectly through the capital markets that put downward pressure on stock prices, thus indirectly punishing the organization and management. In contrast, litigation is an active act of punishment performed directly through the court system, thus directly punishing the organization and management. In the first act, an investor who sells

[1] I acknowledge that this is a simplistic view of capital markets. As considered by Healy & Palepu (2001) and others, a more full model notes that investors are not entirely trusting, which is why we have intermediaries such as auditors and regulators. However, introducing these concepts does not take away from the fact that some trust level must be established for investors to give their capital to a manager, and when fraud occurs, this trust is broken.

all their shares has no future relationship with the fraudster and avoids all future interactions. Additionally, in dealing out punishment, they allow the capital markets' institutional structure to penalize the fraudsters through valuation effects. However, it is not certain that it will have the intended outcome. For example, for every seller of shares, there must be a counterparty that is buying. Hence, the punishment can be reduced or negated by someone else's actions.

However, an investor that brings a lawsuit against an organization is actively trying to punish the fraudsters through direct costs. The motivation for this type of punishment, and why organizations like the SEC pursue litigation, is twofold. First, to deter future bad behavior, and second, a desire for retribution to restore the harm done (Heminway, 2007). One concern with litigation raised by Amiram et al., (2018) is who bears the cost. While management commits fraud and is the desired target for punishment, an organization's legal fees and settlements mean investors are being hurt by the fraud itself and the legal settlements. However, Brown and Moser (2017) suggest that investors will still engage in costly lawsuits even when they cannot recover legal fees or receive restitution for their losses due to the fraud. Thus, the act of punishment may be reward enough.

Misreporting Fraud Versus Embezzlement Fraud

An important thing to note is that the research discussed above focuses on fraudulent financial reporting. This is due primarily to the fact that the majority of the research in this area is done using data gathered from organizations such as the SEC who are primarily concerned with the reporting of financial information (see Amiram et al., (2018) and Karpoff et al., (2017) for an extensive review of the research findings and the databases used). However, other types of fraud occur, and it is essential to understand how investor's avoidance and revenge behaviors are affected.

According to Auditing Standard 2401 (PCAOB, 2020), two major types of fraud are relevant to an auditor's assessment of fraud, misstatements arising from fraudulent financial reporting, and misstatements arising from misappropriation of assets. Fraudulent financial reporting is defined by "statements designed to deceive financial statement users where the effect causes the financial statements not to be presented, in all material respects, in conformity with generally accepted accounting principles (GAAP)." Misappropriation of assets is defined as "the theft of an entity's assets where the effect of the theft causes the financial statements not to be presented, in all material, respects, in conformity with GAAP." Throughout the remainder of the paper, I refer to fraudulent financial reporting and misappropriation of assets more colloquially as misreporting and embezzlement, respectively.

According to the Association of Certified Fraud Examiners (ACFE), misreporting accounts for the lowest frequency of fraud but has the highest average cost, whereas embezzlement accounts for the highest frequency of fraud but with the lowest average cost (ACFE, 2020). Interestingly, Christensen et al., (2010) find that investors respond most negatively to misreporting frauds than other types of fraud, suggesting that investors may have different reactions to different types of fraud. However, because Christensen et al., (2010) use archival data, it is also possible that the magnitude of the fraud, i.e., the cost, is what is driving the results. Thus, an experiment will allow me to discern if there are differential reactions from investors exposed to misreporting versus embezzlement frauds by keeping key factors constant between conditions.

The existing literature on investor reactions to fraud leads to the expectation that investors will punish fraudsters through avoidance and revenge behaviors. Additionally, the limited literature looking at different types of fraud would suggest that investors will respond more negatively to misreporting than embezzlement fraud. Stated more formally:

H1 Investor's avoidance and revenge behavior will be higher in response to misreporting fraud compared to embezzlement fraud.

Organizations Response to Fraud & Nature of the Trust Violation

Hersel et al. (2019) note that organizations can adopt different corrective actions to restore trust after various types of organizational misconduct. Two types of corrective actions discussed by Hersel et al. (2019) are what they refer to as "policy changes" and "executive dismissal." A review of organizations' different strategies to restore trust after fraud finds that policy changes and executive dismissal are the common approaches adopted (Chakravarthy et al., 2014). For example, to repair trust with investors, organizations may increase board independence (Farber, 2005), fire the CEO (Karpoff et al., 2008b), dismiss the external auditors (Hennes et al., 2014), or implement significant structural changes including strengthening internal controls (Cianci et al., 2019). However, these strategies are typically focused on long-term changes to repair trust, which often takes time to implement and does not slow or reverse damage in the immediate aftermath of fraud.

Another type of corrective action discussed by Hersel et al. (2019) that has not seen use by organizations guilty of fraud is what they refer to as "organizational accounts," or more simply, communicating with victims. Crisis management theories like the Situational Crisis Communication Theory (SCCT) (Coombs, 2007) suggest that organizations can prevent further damage and restore trust through their

response strategy. According to SCCT, misstatements and embezzlement are considered preventable crises because controllability and responsibility lie with the organization. Prior research utilizing SCCT documents many adverse outcomes for organizations in non-fraud focused preventable crises consistent with what Amiram et al., (2018) observe for misreporting firms. For example, decreased reputation of the organization (Claeys et al.,, 2010; Verhoeven et al.,, 2012), lower stock returns (Racine et al., 2020), higher predilection to punish the organization (Jorgensen, 1996), and increased anger towards the organization (Choi & Lin, 2009; Jorgensen, 1996; McDonald et al.,, 2010).

The SCCT is a prescriptive model. As such, it recommends that the best response to minimize the negative outcomes described above and restore trust is for the organization to apologize. An extensive amount of research has espoused the many benefits of apologies, including increased reputation of the apologizer (Claeys et al., 2010; Rasso, 2014), smaller losses in share price (Racine et al., 2020; ten Brinke & Adams, 2015), lower legal consequences such as negligence verdicts, lawsuit settlements, and punitive damages (Cornell et al., 2009; Ho & Liu, 2011a, 2011b; Patel & Reinsch, 2003; Rasso, 2014) and reduction in negative affect towards the apologizer (Jorgensen, 1996; Lee & Chung, 2012; McDonald et al., 2010; Ohbuchi et al., 1989; Turk et al., 2012). Nevertheless, as Racine et al. (2020) note, organizations guilty of fraud do not appear to offer an apology.

The likely cause for why organizations do not apologize after a fraud is antiquated legal views advising management not to apologize as it can be seen as a declaration of reasonability and may open the organization up to legal liability (Kramer & Lewicki, 2010; Tyler, 1997). However, two factors refute this as a valid argument. First, while certainly warranted, this concern might be overplayed given the evidence that public markets are already punishing firms 7.5 times more than the legal system does (Karpoff et al., 2008a).[2] That is, losses in share value far exceed any costs associated with litigation. Giving even more strength to the false notion that apologies are bad from a legal point of view, recent research finds that apologies for medical malpractice decrease settlement costs and increase the speed in which a settlement is reached (Ho & Liu, 2011a, 2011b) and increased the likelihood a bankruptcy judge agrees with a proposed repayment plan (Robbennolt & Lawless, 2013). Research on auditor negligence finds similar results, with apologies reducing assessments of punishments by jurors against audit firms' negligence leading to an audit failure (Cornell et al., 2009; Rasso, 2014). However, while these examples represent positive outcomes associated with litigation and apologies, fraud occurring in an organization is a fundamentally different context. Thus it is unclear how effective an apology will be.

There is also mixed evidence about the efficiency of apologizing for a preventable crisis. For example, Coombs and Holladay (1996) find that matching crisis response to the crisis type (i.e., apologize for preventable crises) leads to a more favorable reputation than mismatched responses. Likewise, Racine et al. (Racine et al., 2020) find that matching response type to crisis type leads to lower stock price losses following a crisis, while a mismatch exacerbates negative share price effects. In contrast, Claeys et al. (2010) find that matching or mismatching does not affect the organization's reputation. Other research suggests that the best response to a preventable crisis is to *deny* responsibility, such as using an excuse or blaming someone else, rather than apologizing (Jin, 2009, 2014).

Additionally, while preventable crises by their nature mean the organization is responsible for the crisis, individuals outside the organization might not see clear evidence of guilt, which can reduce an apology's efficacy because of a perceived mismatch. For example, Kim et al., (2004) show that while apologies are not effective when guilt is still uncertain, apologies are more effective than denying responsibility once guilt is established. However, Fuoli et al. (2017) show that apologies are less effective than denial, even when the evidence establishes guilt. Similarly, Gerken et al. (2019) find that when fraud allegations are found to lack evidence of guilt, an initial apology leads to lower investor judgments than if the organization had initially denied responsibility.

A line of research looking at apology's efficacy as a response to trust violations has explored trust's underlying constructs. Trust and the associated violations can be categorized as ability (referred to by some as competence), benevolence, and integrity (Mayer et al., 1995). According to Mayer et al. (1995), ability encompasses a set of domain-specific "skills, competence, and characteristics" that the trustee possesses suitable to the task for which trust is needed. Benevolence is the "extent to which a trustee is believed to want to do good to the trustor." Integrity is the "perception that the trustee adheres to a set of principles that the trustor finds acceptable." Prior research has focused primarily on differences between ability- and integrity-based trust violations (e.g., Elliott et al., 2012; Ferrin et al., 2007; Kim et al., 2004, 2006), with a smaller set of research considering differences between benevolence- and integrity-based trust violations (e.g., Fuoli & Hart, 2018; Fuoli et al., 2017).

In this study, I focus exclusively on the dimension of integrity. Lewicki and Brinsfield (2017) elaborate on the definition of integrity to specify that it is "reflected in

[2] One important thing to note is that damages awarded from a lawsuit come directly from the organization's resources. In contrast, the 7.5 times loss in market value is not capital being lost from within the firm, but rather other shareholders' capital being lost.

whether the actor tells the truth, keeps his promises, and demonstrates he holds some foundational moral or ethical principles and standards." It is reasonable to assume that investors expect top management to truthfully present information about the organization's financial performance and follow the rules and regulations related to financial reporting (e.g., GAAP). At the same time, it is also reasonable to assume that management will not steal from investors by unlawfully taking assets from the organization (e.g., cash). If either of these events occurs, management has violated the expected norms related to integrity within the trust relationship between investors and management. Adding to the situation's complexity, it is typically more challenging to restore trust after an integrity-based trust violation (Tomlinson & Mayer, 2009).

With this integrity-based trust violation in mind, the question is, what is the most effective way to repair trust after a misreporting or embezzlement fraud? While apology appears to be the recommended response according to SCCT, research looking specifically at the dimensions of trust violations suggests that apology may not be the optimal response. Two other responses, denial and remaining silent, are often as effective or more effective at rebuilding trust.

A more typical response is for management to remain silent when evidence of fraud is brought to light. For example, Sunbeam's management never denied or admitted to committing fraud (Norris, 2001). Despite silence being the de-facto response to fraud, Ferrin et al., (2007) find that being silent is a suboptimal response strategy for integrity-based trust violations. They find that remaining silent has similar effects on restoring trust as an apology but is less effective than denial. However, it is essential to note that in the Ferrin et al., (2007) study, guilt was not established, so it is unclear if the findings would extend to a situation where management is guilty of committing fraud. Intuition would suggest that investors interpret silence from management to signal that they are not remorseful for what they have done and thus react negatively towards the organization. This results in trust not being actively repaired and investor behavior continuing to be hostile towards the organization.

Another commonly used response is for management to deny responsibility by shifting blame to another party through scapegoating (Caldiero et al., 2009). For example, Jeffrey Skilling, CEO of Enron, insisted that Arthur Andersen was responsible because they approved the fraudulent transactions (Beltran, 2002). A series of seminal papers find that denial is a more effective response than apology when offered after an integrity-based trust violation (Kim et al., 2004, 2006). However, again the results of their study are within a world where guilt is not established. Contradictory evidence related to when guilt is established suggests in one paper that denial is counterproductive when guilt is known (Kim et al., 2004) while more recent studies find that denial is still more effective than an apology, even when the evidence establishes guilt (Fuoli et al., 2017; Gerken et al., 2019).

Taken together, it would seem that the best way to reduce avoidance (selling shares) and revenge (litigation) behaviors are for organizations to deny responsibility after committing integrity-based trust violations like misreporting or embezzlement, even when guilt has been established. Thus, I propose two hypotheses consistent with the existing research on integrity-based trust violations:

H2 In response to embezzlement fraud, investors' avoidance and revenge behavior will be lower when the organization scapegoats instead of apologizing or remaining silent.

H3 In response to a misreporting fraud, investors' avoidance and revenge behavior will be lower when the organization scapegoats instead of apologizing or remaining silent.

Despite the predictions above, different types of fraud may run deeper than simple integrity-based trust violation categorization. Recall that integrity is defined more broadly in the trust repair literature as organizations' moral principles and standards (Gillespie & Dietz, 2009; Krylova et al., 2017; Lewicki & Brinsfield, 2017). A tangential line of research exploring trust within leader–follower dynamics takes the concept of integrity and divides it into two types: behavioral integrity and moral integrity (Krylova et al., 2017; Tomlinson et al., 2014). Behavioral integrity is consistency between a leader's words and deeds, absent judgment of morality. Prior research has found a positive relationship between behavioral integrity and such dimensions as trust (Palanski et al., 2011; Tomlinson & Carnes, 2015), organizational commitment (Fritz et al., 2013; Leroy et al., 2012), and employee performance (Simons et al., 2015). Moral integrity takes behavioral integrity and applies moral judgments on top of it. That is, the consistency between a leader's words and deeds to the values and principles of the observer (Krylova et al., 2017; Simons et al., 2015; Tomlinson et al., 2014). Thus, moral integrity may be seen as a more stringent set of criteria to judge a leader's integrity.

Building on the moral integrity dimension, I propose that differences in the underlying moral foundation that is violated due to the nature of fraud may cause differential effects on avoidance and revenge behavior. Green (2007) posits that white-collar crime in general, and fraud, more specifically, can be defined by various moral violations. Green and Kugler (2012) show that the public's moral intuitions about whether something is fraud or not is consistent with legal systems' classification of something as fraud. However, other areas of white-collar crime, specifically bribery and perjury, were not as consistent between the public's moral intuitions and current laws. Thus, investors' moral intuitions

seem remarkably fine-tuned for moral judgments related to misreporting and embezzlement.

Consistent with how AS 2401 describes frauds, Green (2007) describes misreporting as a moral violation of deception, while embezzlement is primarily a moral violation of stealing. According to Green (2007), deception consists of "the communication of a message, or attempt to communicate a message, with which the communicator, in communicating, intends to cause a person to believe something that is untrue." Green's definition is very similar to how AS 2401 defines misstatements: "intentional misstatements or omissions of amounts or disclosures in financial statements designed to deceive financial statement users." On the other hand, stealing is defined by Green as: "to steal something is to violate, in some fundamental way, another's rights of ownership." This is to say that the theft deprives the victim of the ability to possess or maintain ownership of the thing that has been stolen. Green's defining of deception and stealing does not require moral violations to be mutually exclusive. However, it suggests a primary moral violation that draws observer's attention.

However, while there is a theoretical distinction in the moral violations of the two types of fraud, it is not clear precisely what interactive effect this underlying moral violation and the organization's trust repair strategy will take. Thus, I propose a basic research question:

RQ Do differences in the underlying moral norm violated for misreporting versus embezzlement frauds lead to differential avoidance and revenge behaviors in response to organizational responses?

Experiment 1

Overview and Task

For experiment 1, I use a 2 × 3 between-subjects design with fraud type (misreporting and embezzlement) and response (apology, scapegoat, and silence) as independent variables. I manipulate fraud type by presenting a newspaper article describing how: (1) the company has been falsifying its financial statements, or (2) the CFO has been embezzling money. The cost of both frauds totals $25 million. I manipulate response by presenting a second newspaper article that includes quotes from the CEO offering: (1) a full apology to shareholders, (2) scapegoating responsibility by shifting blame to the auditor, or (3) a statement from the CEO saying "I have no comment at this time." For robustness and establishing a benchmark with theory, I also administer an additional condition: an accidental fire as a third crisis type. Since the results successfully replicate expectations from crisis management theory, I do not discuss this condition further.[3]

Participants

Participants are MTurk workers who completed the study online.[4] I programmed the study using Qualtrics. To exclude unqualified respondents, I created an investment knowledge/experience screening that individuals were required to pass to participate. This screening consisted of four randomly selected questions (from a bank of 16 questions) and two demographic questions about personal investing experience and relevant professional designations they held (e.g., CPA). Each of the four knowledge questions was worth one point, a professional credential was worth four points, and years of investment experience garnered increasing points.[5] Participants needed to score at least three points to participate in the study; they were not told how many points they needed to score to qualify but were told of the required screening questions. Participants were not paid to complete the screening due to its short length; participants that completed the study were paid $3.00.

Of the 631 participants who completed the investment screen, 80% (503) scored a three or higher. Participants who passed the investment screen had an average score of 6.46, with approximately 1–5 years of investing experience.[6] I dropped one participant because of missing manipulation check data and six participants because they sold at or near the maximum amount of shares possible *and* cited reasons related to personal investment style (e.g., "I want more diversification" and "I don't like to invest in sectors I'm unfamiliar with") instead of reasons related to the case materials. Finally, as mentioned above, I excluded participants in a baseline condition, "accidental fire" that was used to benchmark if frauds, in general, were seen as worse than other crises. Of the 328 remaining participants, 7% (24) had no

[3] The accidental fire condition resulted in significantly lower responsibility judgments than the misstatement and embezzlement conditions ($p < 0.01$).

[4] Several studies have shown that the quality of data gathered through MTurk is comparable to those collected in a more traditional university laboratory setting with the benefit of being more demographically diverse (Brandon, Long, Loraas, Mueller-Phillips, and Vansant, 2014; Buhrmester, Kwang, and Gosling, 2011; Mason and Suri, 2012; Ferrell, Grenier, and Leiby, 2017).

[5] Points for experience are as follows: 0–6 mths = 1; 6–12 mths = 2; 1–5 yrs = 3; 5 + yrs = 4.

[6] The average score of those participants that did not pass the screen was 1.46, and 75% had no prior investment experience, while 21% had less than six months' investment experience. My method of ensuring appropriate expertise by participants was approved by my ethics board (IRB equivalent), it was explained in my letter of information, and I received no complaints from any participants.

experience investing their own money, 18% (60) had less than one years' experience, 34% (111) had between one and five years' experience, and 41% (133) had more than five years' experience. The average age of participants was 37 (SD = 10.66, min = 19, max = 72), 58% (190) were male, 77% (254) held at least an associate degree, 67% (218) had full-time employment, and 14% (46) held a financial designation.

Case Materials and Procedures

I adapted materials for my study from Elliott et al. (2012), retaining the same name (Armano) and industry of the company (international confectionery manufacturer and retailer). Participants were asked to assume that they received a gift from a family member consisting of cash and shares of Armano. I informed participants that their financial advisor would provide them with information about the company and ask what they want to do with the stock. Instructions stated that they would view both financial and non-financial information and were encouraged to take notes during the study. The notes were intended to help participants remember relevant information impacting their decision. In hopes of forcing some participants to read materials that they may typically skim too quickly, I hid the advance button on each page for 10 s. Page timers revealed that participants spent an average of 47 s reading each of the news articles, which is a reasonable amount of time to read and write notes about each article.[7]

Background Materials and Initial Decision

Participants read a summary about Armano and a short biography of CEO Dan Athens. Next, participants read a series of five Associated Press (AP) articles. These news articles discussed five important events for Armano: (1) winning an award for its chocolates, (2) the health benefits of chocolate being the motivation for a new product, (3) the closure of 20 underperforming stores, and (4) and (5) two historical earnings announcements (2014 and 2015). Like Elliott et al. (2012), these five press releases were intended to establish trust between the participants and Dan Athens/Armano. The earnings announcements reported consistent double-figure percentage growth in revenue and earnings, establishing an expectation that the company is doing well.

At this point, participants were told that the gift they received consisted of 10,000 shares of Armano stock and enough cash to purchase an additional 10,000 shares of stock. Participants were asked if they would like to change (increase or decrease) their current investment, followed by asking for the specific number of shares (constrained between 0 and 10,000). Following this, participants indicated how confident they are that "Armano will continue to meet analysts' expectations for strong growth in revenue and earnings in the foreseeable future" on a seven-point scale (1 = Not at all confident; 7 = Extremely confident). Finally, participants were asked to list one to three key factors supporting their decision and were encouraged to use their notes when deciding what factors are the most relevant.

Manipulation of Crisis Type and Crisis Response

After participants made their initial investment decision, their investment advisor sent them an email with the subject line "VERY IMPORTANT!" and a note saying, "You should read the attached news article before making your final decision about whether to buy or sell the stock you currently own in Armano." The participants read one of two AP articles discussing a crisis confronting Armano (misreporting or embezzlement). The misreporting article's keywording indicated that the company had been artificially inflating revenues by $25 million by recording sales before product shipment to meet analyst expectations. The embezzlement article's keywording indicated that the CFO had been embezzling by using secret, unauthorized and improper loans that were later "forgiven," amounting to $25 million. See Part A of Appendix 1 for the exact wording used for the fraud manipulation.

Participants then received another email from their financial advisor with another AP article. The message from the advisor read: "This is a follow-up article to the one I sent you a few days ago. Read this and then make your decision about what you want to do." Participants read Armano's CEO Dan Athen's response to the crisis (apology, scapegoat, or silence). The CEO's apology contained the four elements necessary for a full apology (O'Hara, 2004). The CEO began with, "I am deeply sorry for what has happened," and he offers a brief explanation of what allowed the crisis to occur. He then apologizes "to my shareholders to whom I have let down" and promises to "right this wrong and work harder than ever to regain your trust." In the misreporting condition, he indicates that short-term gains overshadowed "my attention to proper accounting" and that the "desire to keep share prices high does not permit revenue recognition practices that are outside of acceptable accounting standards." In the embezzlement condition, the CEO indicates that "weak internal controls and my failure to detect fraudulent activity" allowed the CFO to embezzle funds, and the focus on the business overshadowed attention to "important fraud control activities."

[7] I included both time spent and quiz scores as separate covariates in my analyses but did not find any significant time or score effects. Thus, I do not discuss either any further.

The language in the scapegoat condition laid blame on the auditors for both fraud conditions, with the CEO asserting that "I have not done anything wrong." In the misreporting scenario, the CEO claimed the auditors approved the revenue recognition practice to make the financial statements comparable to competitors. With embezzlement, the CEO blamed internal controls, advised by the auditors, for allowing the embezzlement to happen. Finally, in the silence condition, the article discloses that the company released a statement saying "they have no comment at this time" for both types of fraud. Part B of Appendix 1 provides the full text of the organizational responses to the accounting fraud, while Part C provides the embezzlement responses.

Affect and Responsibility Questions

Before asking participants to give their final investment decision, I gathered measures related to affect and responsibility. For affect, I used the scale developed by Jin et al. (2014) that separates crisis affect into three factors based on attribution. The first factor is Attribution-independent (AI) affect, including anxiety, fear, apprehension, and sympathy ($\alpha = 0.88$). These feelings are theorized to be experienced during a crisis when it is not clear who is at fault. The second factor is External-attribution-dependent (EAD) affect, which consists of disgust, contempt, anger, and sadness ($\alpha = 0.86$). These should be experienced when the organization is responsible for the crisis. The third factor is Internal-attribution-dependent (IAD) affect, which includes guilt, embarrassment, and shame ($\alpha = 0.92$). This type of affect is generated when individuals feel associated with an organization with a crisis (e.g., investing in a favorite apparel company that is discovered to engage in child labor violations). Participants reported how they felt about Armano now using a seven-point scale (1 = does not describe my feelings; 7 = clearly describes my feelings) for each of the 11 types of affect captured by the three factors described above.

To measure responsibility, I used a scale developed by Brown and Ki (2013) which separates an organization's responsibility for a crisis into three factors. The first factor, intentionality, captures "the degree to which the crisis was created purposefully by a member or members of the organization" ($\alpha = 0.91$). The second factor, accountability, captures "the degree to which the organization could have avoided the crisis" ($\alpha = 0.97$). The third factor, locality, captures "the degree to which the crisis is an internal matter" ($\alpha = 0.89$). The Brown and Ki scale was used instead of other responsibility scales used previously in crisis research (e.g., Griffin et al. (1992) blame scale). I use the Brown and Ki scale because, unlike other scales repurposed for studying organizations, it was explicitly developed to measure organizational responsibility using multidimensional factors.

Final Investment Decision and Retaliation Questions

Next, participants were asked to make their final decision regarding their current investment in Armano. Participants answered the same questions they answered when making their initial decision while seeing their original decisions (displayed below each question), and they were reminded that they could use their notes. Participants were then asked two questions about legal behavior: (1) how likely would they be "to consider a class-action lawsuit against Armano" with end-points of "not at all likely" to "highly likely" and (2) if a fine were imposed on Armano by the government for the crisis, "how large of a fine should Armano have to pay" with end-points from "no fine" to "maximum fine."

Variables, Manipulation Checks, and Demographics

I used two dependent variables in my analyses that map to avoidance and revenge behavior as discussed in the theory section: (1) trading shares (avoidance) and (2) litigation (revenge). Trading shares is calculated as the percentage of shares traded (shares traded/10,000). Litigation behavior is calculated as the average of two measures (likelihood of joining a lawsuit and the amount of fine Armano should have to pay). Cronbach's alpha of these two measures is 0.70. My two manipulations constitute the independent variables.

To control for participants' beliefs about Armano's riskiness and the characteristics of management of Armano, I asked participants how risky they think Armano is. Additionally, I ask how trustworthy management is, how competent management is, and ("based on the information provided to you in the case"), how easy it was to make a decision. Participants then answered two manipulation check questions about how much responsibility they thought Armano accepted for the crisis and how much responsibility the auditors had for the crisis. All of the above questions were on a seven-point scale. Two comprehension check questions asked participants to correctly identify, in a multiple-choice format, the crisis and response they read in the experiment. Finally, participants answered demographic questions about age, gender, education, and employment status. After this, participants received a unique code that they would then use to get paid for the experiment.

Results of Experiment 1

Manipulation Checks

I performed a series of one-way analysis of variance (ANOVA) to check if my manipulations of fraud type and organization response were successful. To test my fraud type manipulation, I measured differences in the intentionality

and accountability dimensions of organizational responsibility (Brown & Ki, 2013).[8] The mean difference in crisis intentionality among the two fraud types was insignificant ($F(1, 214) = 0.21$, $p = 0.64$). It appears that participants viewed both embezzlement ($M = 6.03$, SD = 1.25) and misreporting ($M = 6.11$, SD = 0.97) as highly intentional, with scores well above the midpoint. However, the mean difference in crisis accountability between embezzlement ($M = 5.46$, SD = 1.24) and misreporting ($M = 6.39$, SD = 0.97) was significant ($F(1, 214) = 38.16$, $p < 0.01$).[9] A recall question finds that 98% (322) of participants could correctly recall the organization response they read about in the study. The results of my manipulation check about the intentionality and accountability of the crisis suggest that my crisis type manipulations were successful. Participants perceived organizational responsibility to be equal to or higher when the fraud was a misstatement compared to embezzlement.

To test for my organization response manipulation's success, I asked two questions: (1) How much responsibility did Armano accept for the crisis? and (2) How much responsibility does Armano's auditors have for the crisis? The mean difference in answers to the first question when they apologize ($M = 5.51$, SD = 1.48) versus scapegoat ($M = 2.96$, SD = 1.76) as well as silence ($M = 2.66$, SD = 1.90) was significant ($p < 0.01$). There is no significant difference between scapegoating and silence ($p = 0.44$). Finally, there were no significant differences in perceptions of auditor responsibility for the fraud, whether the organization apologizes ($M = 5.15$, SD = 1.54), scapegoats ($M = 4.94$, SD = 1.54), or remains silent ($M = 4.83$, SD = 1.44).[10] A recall question finds that 85% of participants (279) could correctly recall the organization response they read about in the study. Results of my manipulation checks for organization response suggest my manipulations were also successful. Participants in the apology condition perceived that the company accepted almost twice as much responsibility as those in the scapegoat or silence condition.

Tests of Hypotheses

My first hypothesis predicts a main effect of crisis type while H2 and H3 predict crisis type and crisis response's joint effects. Because I use two different dependent variables to capture avoidance and revenge behavior, shares traded and litigation, I report the results of each of these analyses separately in Tables 1 and 2, respectively. In both tables, Panel A reports the means, standard deviations, and cell sizes of the respective dependent variable, whereas Panel B reports the results of ANOVAs.[11] Figure 1 presents my results graphically for both dependent variables.

My first hypothesis states that investor reactions will be more negative after a misreporting fraud than embezzlement fraud. Results with shares traded reveal a significant effect of fraud type ($F = 26.70$, $p < 0.01$), supporting H1. Results with litigation as the dependent variable (Table 2) also reveal a significant effect of fraud type ($F = 21.91$, $p < 0.01$), also supporting H1.

Recall that H2 (H3) predicts that investors' desire for avoidance and revenge will be lower in response to embezzlement (misreporting) fraud if the organization responds by scapegoating responsibility. Both hypotheses argue that scapegoating is the superior response compared to apologizing or remaining silent. Looking at avoidance behavior (shares traded), Panel B of Table 1 reports non-significance for fraud type/organization response ($p = 0.25$). However, planned contrasts in Panel C report a significant difference between an apology and scapegoating for embezzlement ($F = 3.01$, $p = 0.04$), supporting H2.[12] Panel

[8] Before conducting any tests, I performed factor analyses on the items from the organizational responsibility scale (Brown and Ki 2013). My factor analyses used a varimax rotation, retaining only factors with an eigenvalue greater than one and items that loaded at 0.70 or higher. For the organizational responsibility scale, two factors appeared in the data. The first is the accountability dimension, consisting of three of the six items designed to capture accountability (eigenvalue = 5.39, = 0.89). The second is the intentionality dimension, consisting of the three items designed to capture intentionality (eigenvalue = 1.43, = 0.88). The three items designed to measure the locality dimension of organizational responsibility did not show any significant loadings.

[9] Compared to a baseline condition where the $25 million-dollar loss was attributable to a fire at the factory, both types of fraud result in significantly higher responsibility levels ($p < 0.01$, unreported), consistent with theory and my expectations.

[10] Given that no information within the materials would indicate the auditors are responsible other than in the scapegoat condition, the level of blame assigned to the auditors by participants in the misreporting condition is surprising. I run a one-way ANOVA with auditor blame as the dependent variable and fraud type as the independent variable. I note that the means for both embezzlement (M = 4.88, SD = 1.54) and misreporting (M = 5.06, SD = 1.48) are significantly higher than the scale midpoint ($p < 0.01$) but not significantly different from each other ($p = 0.29$). I interpret these findings as evidence that investors and the general public assume that auditors are responsible for any type of fraud because they believe an auditor's job is to detect fraud, something commonly referred to as the expectation gap (McEnroe and Martens 2001).

[11] For the analysis in which shares traded is the dependent variable, I include participants' pre-manipulation shares traded as a covariate on my model.

[12] I also run a similar model using participant's confidence about Amrano's ability to "continue to meet analysts' expectations for strong growth in revenue and earnings in the foreseeable future" as a proxy for expectations about future price performance. The only difference in results is that the interaction between crisis type and crisis response is significant. All inferences concerning the hypotheses remain unchanged, strengthening my acceptance of H2 and rejection of H3.

Table 1 Experiment 1: impact of fraud type and organization response on avoidance behavior

Panel A: percentage of shares traded by condition

	Accounting Fraud	Embezzlement Fraud	Total
Apology	− 61.51	− 16.88	− 38.79
	38.47	*59.56*	*54.88*
	n = 54	*n* = 56	*n* = 110
Scapegoat	− 58.26	− 31.57	− 45.92
	44.67	*57.49*	*52.48*
	n = 57	*n* = 49	*n* = 106
Silence	− 56.49	− 15.64	− 36.43
	50.10	*62.58*	*59.93*
	n = 57	*n* = 55	*n* = 112
Total	− 58.71	− 20.95	− 40.29
	44.55	*60.04*	*55.89*
	n = *168*	*n* = *160*	*n* = *328*

Panel B: ANCOVA (p values two-tailed)

Source of variation	SS	*df*	MS	*F*-Stat	*p* value	Hypothesis
Fraud type	116,218.25	1	116,218.25	44.80	< 0.01	H1
Organization response	5870.33	2	2935.17	1.13	0.32	
Fraud type X organization response	7319.10	2	3659.55	1.41	0.25	
Pre-crisis investment decision	63,299.61	1	63,299.61	24.40	< 0.01	
Error	832,655.34	321	2593.94			

Panel C: planned contrasts (p values one-tailed)

Contrast	Contrast	*F*-Stat	*p* value	Associated hypothesis
Embezzlement fraud: apology vs. scapegoat	18.03	3.26	0.04	H2
Embezzlement fraud: apology vs. silence	− 1.62	0.03	0.43	H2
Embezzlement fraud: scapegoat vs. silence	− 19.65	3.84	0.03	H2
Accounting fraud: apology vs. scapegoat	− 3.27	0.11	0.37	H3
Accounting fraud: apology vs. silence	− 3.81	0.16	0.35	H3
Accounting fraud: scapegoat vs. silence	− 0.54	0.00	0.48	H3

Panel A, presents mean values and *standard deviations* for participants' shares traded (percentage of shares traded calculated as shares traded/10,000), by condition. Panel B presents my ANCOVA results testing for the effects of my crisis type and crisis response manipulations on shares traded. Panel C presents planned contrasts

C of Table 1 reveals a non-significant difference between an apology, scapegoating, and silence for shares traded (smallest p value = 0.35), thus rejecting H3. Panel A of Fig. 1 graphs the differences in shares traded based on fraud type and response.

Turning to revenge behavior (litigation), Panel B of Table 2 reports a significant interaction effect between fraud type and response ($F = 2.98$, $p = 0.05$). Planned contrasts in Panel C report no significant differences between response types for embezzlement fraud (smallest $p = 0.11$), thus rejecting H2. However, Panel C reports a significant difference between an apology and scapegoating fraud ($F = 7.36$, $p < 0.01$) as well as a marginally significant difference between an apology and silence ($F = 2.14$, $p = 0.07$) for misreporting fraud, thus supporting H3.

Supplemental Analysis: Perceptions of Trust and Moral Violation

I also look at how perceptions of management's trustworthiness are affected by the type of fraud and response strategy used. I measured participants' beliefs regarding their level of trust in Armano management using a seven-point scale from "not at all" to "extremely." I conduct an ANOVA with trust as the dependent variable. Results reveal a significant main effect for crisis type ($F = 59.56$, $p < 0.01$) and a significant

Table 2 Experiment 1: impact of fraud type and organization response on revenge behavior

Panel A: legal action by condition

	Accounting fraud	Embezzlement Fraud	Total
Apology	5.48	4.07	4.76
	1.10	*1.68*	*1.58*
	$n=54$	$n=56$	$n=110$
Scapegoat	4.72	4.26	4.50
	1.39	*1.65*	*1.53*
	$n=57$	$n=49$	$n=106$
Silence	5.07	3.89	4.49
	1.16	*1.78*	*1.61*
	$n=57$	$n=55$	$n=112$
Total	5.08	4.07	4.59
	1.26	*1.70*	*1.58*
	n = 168	*n = 160*	*n = 328*

Panel B: ANOVA (p values two-tailed)

Source of variation	SS	*df*	MS	*F*-Stat	*p* value	Hypothesis
Fraud type	84.72	1	84.72	38.73	< 0.01	H1
Organization response	6.26	2	3.13	1.43	0.24	
Fraud type X organization response	13.03	2	6.51	2.98	0.05	
Error	704.33					

Panel C: planned contrasts (p values one-tailed)

Contrast	Contrast	*F*-Stat	*P* value	Associated hypothesis
Embezzlement fraud: apology vs. scapegoat	− 0.18	0.40	0.26	H2
Embezzlement fraud: apology vs. silence	0.18	0.41	0.26	H2
Embezzlement fraud: scapegoat vs. silence	0.36	1.57	0.11	H2
Accounting fraud: apology vs. scapegoat	0.76	7.36	< 0.01	H3
Accounting fraud: apology vs. silence	0.41	2.14	0.07	H3
Accounting fraud: scapegoat vs. silence	− 0.35	1.60	0.10	H3

Panel A, presents mean values and *standard deviations* for participants' retaliatory behavior, by condition. Retaliatory behavior is the average of two measures: likelihood of joining a lawsuit and the amount of fine Armano should have to pay ($\alpha=0.75$). Panel B presents my ANOVA results testing for the effects of my crisis type and crisis response manipulations on retaliatory behavior. Panel C presents planned contrasts

crisis type by crisis response interaction ($F=6.17$, $p=0.02$). I find that apology results in the highest (lowest) level of trust after an embezzlement (misreporting) fraud. Looking more closely at the data, I find that an apology is particularly poor at restoring trust after a misreporting fraud. Contrasts show that trust after an apology is significantly lower than scapegoating and silence ($p=0.05$).

Two critical underlying assumptions within my experiment are that embezzlement and misreporting are both seen as integrity-based trust violations, but that the underlying moral violation is different. I conducted a short survey with out of sample participants to verify these assumptions. Three hundred thirty participants were presented two simplified cases of fraud, one presented as a misreporting fraud and the second as an embezzlement fraud, and asked to rate both cases in terms of integrity- versus competence-based trust violations as well as deception- versus stealing-based moral violations. No information about how the organization responds was presented to participants. Simple t-tests find that both frauds are considered integrity-based trust violations ($p<0.01$). Results also show participants classify misreporting as primarily a moral violation related to deception ($p<0.01$), whereas embezzlement is classified as primarily a moral violation related to stealing ($p<0.01$).

Discussion

Experiment 1 examines investors' avoidance and revenge behaviors following two different types of fraud, misreporting and embezzlement. Results show that investors'

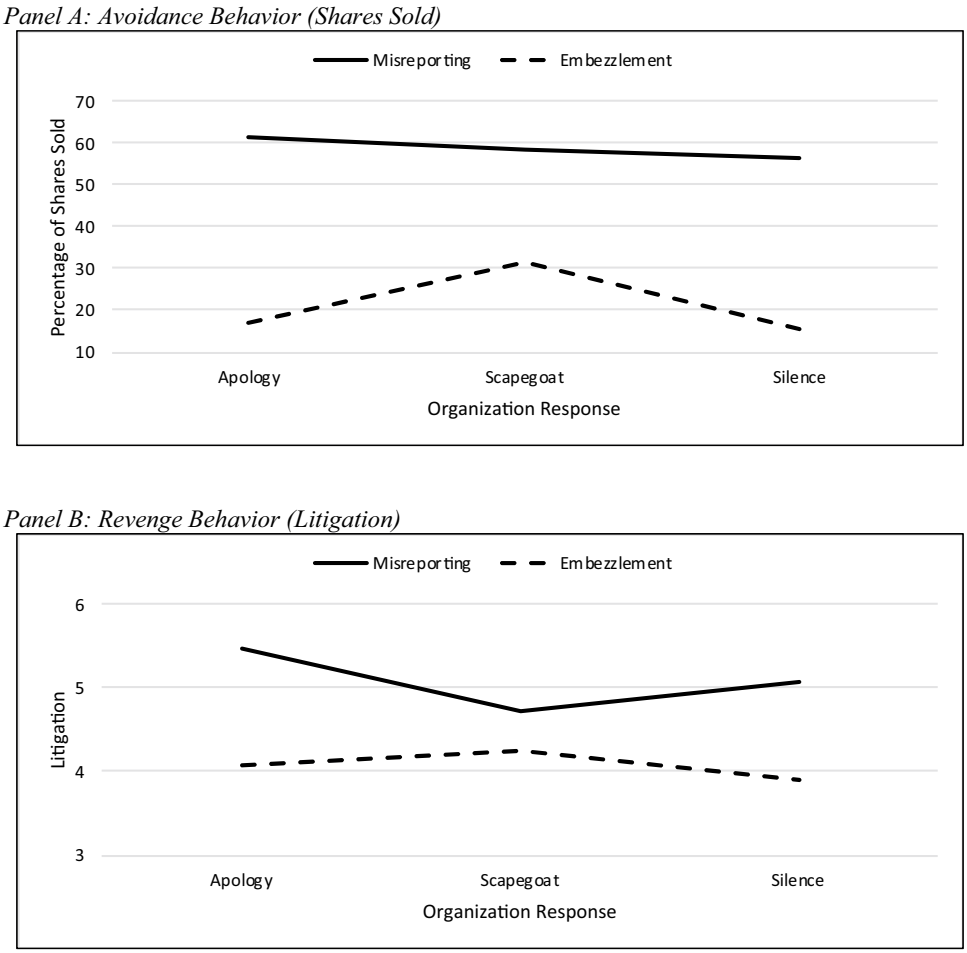

Fig. 1 Experiment 1: impact of fraud type and organization response on avoidance and revenge behavior. The above panels graphically depict investors' reactions by condition. **a** captures the percentage of shares sold. For **b**, retaliatory behavior is the average of two questions: likelihood of joining a lawsuit and the amount of fine Armano should have to pay, on a scale from no fine to a maximum fine ($\alpha = 0.72$). Both judgments are made on a 7-point scale

avoidance behavior (selling shares) is higher after a misreporting than embezzlement fraud. These findings align with what Christensen et al. (2010) observe regarding avoidance behavior by investors following different types of fraud. What is fascinating is that while misreporting frauds are on average larger than embezzlement frauds, their frequency is much lower. Thus, it seems that investors respond to the size of the fraud. However, in my study, I designed my experiment such that the cost of the fraud was equivalent under both the misreporting and embezzlement conditions, suggesting that some other underlying characteristic is driving differences.

Similarly, an investor's revenge behavior (litigation) is also higher after a misreporting fraud than embezzlement fraud. Consistent with the literature on revenge-seeking and punishment, investors will seek litigation as a form of punishment, even when costly (Brown & Moser, 2017; Jackson et al., 2019). In my study, I find that while investors are more likely to pursue litigation against organizations that have committed fraud, they do not divest all their shares, thus exposing themselves to additional losses in wealth as stock prices decline as well as legal settlement costs.

One possible explanation for the differences in avoidance and revenge behavior between misreporting and embezzlement frauds is the underlying moral violation. While investors view both misreporting and embezzlement fraud as integrity-based trust violations, misreporting is primarily a moral violation of deception. In contrast, embezzlement is a moral violation of stealing. While not previously studied empirically, this finding is consistent with how auditing standards discuss these two types of frauds (PCAOB, 2020). It is also consistent with how moral philosophy defines the moral violations underlying white-collar crimes (Green, 2007). This seems to suggest that investors see being deceived as a more egregious crime than being stolen from, offering an avenue for future research on trust violations to explore.

Experiment 1 also examined how an apology after fraud reduces investor's engagement in avoidance and revenge behavior and begins to rebuild trust. It is difficult to know *ex-ante* how effective an apology will be after a fraud given a mix of theoretical arguments and empirical results that suggest it could be helpful or harmful. Additionally, what makes an apology interesting in this context is despite some evidence that an apology may reduce avoidance and revenge

behavior, organizations do not use this response strategy. Organizations are more likely to remain silent or, if they do address victims, deny responsibility. Instead, organizations are more likely to adopt trust rebuilding strategies that are tangible such as firing the CEO or replacing the board (Chakravarthy et al., 2014). However, these often take time to implement and may come after the damage is already done.

I find mixed evidence for apologies effectiveness at mitigating avoidance and revenge behavior in my study. Inconsistent with prior research on integrity-based trust violations (Fuoli et al., 2017; Kim et al., 2004, 2006), I find that avoidance behavior after an embezzlement fraud was lowest when the organization apologized or remained silent. However, consistent with prior research, an apology increased revenge behavior after a misreporting fraud. I also find that apologies did not affect avoidance behavior after a misreporting fraud, or revenge behavior after an embezzlement fraud.

Thus, the results of experiment 1 do little to settle the debate about the efficacy of an apology after a fraud. Taken together, the evidence suggests that apologies are useful in some circumstances, harmful in others, and at times have no effect. The results show that the prescriptive models of SCCT are not always valid nor that the notion that apologies for integrity-based trust violations are always detrimental. Instead, like many other things, many other factors are at play. I propose one possible explanation for the differential pattern of results, the underlying moral violation unique to each fraud type. Another factor that can influence the apology's power is the sincerity of the words being expressed. I explore this second factor more in experiment 2.

Experiment 2

Apology Sincerity

Results from experiment one suggest that an apology has no effect on avoidance behavior for a misreporting fraud but increases revenge behavior. This is partially consistent with prior research on apologies after integrity-based trust violations (e.g., Kim et al., 2004, 2006). I contend that a full apology can be offered but still not be useful because it lacks sincerity and does not express true remorsefulness. An apology that accepts responsibility and offers an expression of remorse, but is expressed with boilerplate verbiage, may cause victims to respond more negatively to the apology. That is, it is worse to express a disingenuous apology that seems forced.

A review of the literature notes that, among other things, the sincerity of an apology increases its effectiveness at repairing trust (Tomlinson et al., 2004). In several studies on interpersonal relationships, victims' perceptions of transgressors' remorse/sincerity were positively associated with forgiveness (Basford et al., 2014; Davis & Gold, 2011; Gold & Weiner, 2000; Sandlin & Gracyalny, 2018; Tomlinson et al., 2004). Lazare (2004) notes that an insincere apology can backfire because it may convey to the victim that the transgressor is indifferent and may amplify the victim's aggression towards the transgressor. Just including an apology's components is not enough to rebuild trust and negate malicious behavior towards an organization if it does not seem sincere (genuinely remorseful).

However, one problem with organizational apologies is they may be perceived as cheap talk or impression management strategies due to the insincere boilerplate legal verbose by which they may be written. Prior research even suggests that an insincere apology is worse than not saying anything (Basford et al., 2014). I propose that the inefficacy of an organizational apology for integrity-based trust violations may be reversed when a more genuine and sincere apology is offered. Offering a more genuine, sincere apology is likely to be more effective at reducing negative behavior towards the firm and may even become the dominant response. More formally:

H4 Investors will be less likely to sell shares or pursue litigation against organizations in response to a misreporting fraud when the organization sincerely apologizes compared to when it insincerely apologizes, scapegoats, or remains silent.

Thus, the goal of experiment two is to test whether a sincerer apology might be able to reverse the observed pattern of an apology being a harmful response after a misreporting fraud.

Overview and Task

Participants

Participants are recruited from Prolific, an online platform similar to Amazon Mechanical Turk, but with some notable advantages. Prolific allows researchers to limit the study to individuals that qualify from a list of previously completed screener questions. I limit my experiment to be available only to participants who: (1) have a 98% approval rate, (2) reside in Australia, Canada, United Kingdom, or the United States (3) speak English as their first language, (4) have made personal investments in stock, and (5) use financial statements "most of the time" when making financial decisions. Participants were paid £1.50 for roughly 15 min of their time.

Five hundred forty-three participants qualified for and completed the study. I dropped one participant because they failed an attention check question and another four

participants because they explicitly told us that I should not use their data at the end of the experiment. Of the remaining 538 participants, the average age was 43 (SD = 12.39, min = 20, max = 78), 62% (334) were male, 83% (446) held at least an associate degree, and 66% (354) had full-time employment. 48% (259) resided in the United States, 45% (241) resided in the United Kingdom, and the remaining participants resided in Canada or Australia.

Case Materials and Procedures

Experiment two uses the same task, background materials, and procedure as experiment one with a few notable differences. First, the type of fraud is held constant as an accounting misstatement, and only the organization's response is manipulated (see Appendix 2 for manipulations). Participants read one of four organizational responses: silence, scapegoating, insincere apology, or a sincere apology. Second, related to only the organizational response being manipulated, I collected additional measures related to (1) how much participants believed the CEO and CFO should be fired, (2) the trustworthiness of CEO Dan Athens (the questions were taken from Elliott et al. (2012)), (3) sincerity of the response from CEO Dan Athens, (4) categorization of misstatement fraud as integrity- or competence-based trust violation, and (5) while affect was still measured, I used a different scale from what was used in experiment 1 (Betella & Verschure, 2016). Crisis responsibility, measured in experiment one, was not included in experiment two. One final difference between the experiments is when demographic data were collected. In experiment one, this information was gathered at the end of the experiment. In experiment two, this information was gathered after participants provided their pre-manipulation investment recommendations (before the experimental manipulation).

Results

Manipulation Checks

I performed a one-way analysis of variance (ANOVA) to see if my organization response manipulation was effective. Participants responded to two questions: (1) How much responsibility did Armano accept for the crisis? and (2) How much responsibility does Armano's auditors have for the crisis? Consistent with results of my first experiment, the mean difference in answers to question one when they sincerely apologize ($M = 69.08$, SD = 28.85) or insincerely apologize ($M = 60.58$, SD = 29.72) versus scapegoat ($M = 28.12$, SD = 28.95), as well as silence ($M = 31.39$, SD = 30.12), was significant ($p < 0.01$). There is a significant difference between sincere and insincere apologies ($p = 0.02$), but no significant differences between scapegoating and silence ($p = 0.36$). Additionally, a recall question finds that 85% (454) of participants could correctly recall the organization response they read about in the study. Results of my manipulation checks for organization response suggest my manipulations were also successful. Participants in the sincere apology condition perceived that the company accepted the most responsibility of all conditions.

A second manipulation check measures subjects' perceptions of how sincere the response was. Participants rated CEO Dan Athen's response for sincerity, remorsefulness, and insincerity (reverse coded). The three measures were collapsed into one measure of sincerity ($\alpha = 0.83$). As expected, the sincere apology had the highest score ($M = 3.23$, SD = 1.44), followed by the insincere apology ($M = 2.90$, SD = 1.17), scapegoating ($M = 2.61$, SD = 1.16), and finally, silence has the lowest score ($M = 2.27$, SD = 1.05). All pairwise comparisons were significant ($p < 0.05$). Thus, it appears that the level of sincerity between different organizational responses was effectively manipulated and consistent with expectations.

Tests of Hypotheses

Hypothesis 4 predicts that a sincere apology will lead to less avoidance and revenge behavior than other response strategies like an insincere apology, scapegoating, or remaining silent. Like experiment 1, I report the results of avoidance and revenge behavior in Tables 3 and 4, respectively. In both tables, Panel A reports the mean, standard deviations, and cell sizes of the respective dependent variable, whereas Panel B reports the results of ANOVAs. Panel C presents planned contrasts. Figure 2 presents my results graphically for both dependent variables.

Shares traded in experiment two is measured the same as in experiment one. Results with shares traded as the dependent variable are similar to those reported in experiment 1. Although graphically, Fig. 2 Panel A appears to show that a sincere apology is no more effective than remaining silent and is worse than offering an insincere apology or scapegoating, there is no significant effect of organization response on the number of shares sold ($F = 1.23$, $p = 0.30$). Thus, consistent with experiment 1, it appears that the offending firm's organization response does not significantly alter the investor's trading behavior. Thus, these results do not support H4.

Turning to revenge behavior, I use the same questions from experiment 1 about the likelihood of engaging in a lawsuit and how large a fine the organization should have to pay, but also include a third measure asking whether the CEO and CFO should be fired. The three variables load together ($\alpha = 0.69$). Graphically, Fig. 2, Panel B, shows a similar pattern as described above, where a sincere apology is a suboptimal response compared to an insincere apology or scapegoating. It appears to result in levels of revenge

Table 3 Experiment 2: impact of fraud type and organization response on avoidance behavior (shares traded)

Panel A: Percentage of shares traded by condition

Sincere apology	Insincere apology	Scapegoating	No comment	Total
− 59.21	− 51.78	− 51.43	− 60.37	− 55.67
43.44	*54.79*	*55.11*	*46.28*	*50.24*
$n=133$	$n=134$	$n=137$	$n=134$	$n=538$

Panel B: ANCOVA (p values two-tailed)

Source of variation	SS	*df*	MS	*F*-Stat	*p* value	Hypothesis
Organization response	8953.73	3	2984.58	1.23	0.30	
Pre-crisis investment decision	55,264.16	1	55,264.16	22.82	< 0.01	
Error	1,290,946.20	533	2422.04			

Panel C: Planned contrasts (p values one-tailed)

Contrast	Contrast	*F*-stat	*p* value	Associated hypothesis
Scapegoat vs. silence	9.46	2.50	0.06	
Insincere apology vs. silence	8.12	1.82	0.09	
Sincere apology vs. silence	1.54	0.07	0.40	H4
Insincere apology vs. scapegoat	− 1.34	0.05	0.41	
Sincere apology vs. scapegoat	− 7.92	1.75	0.09	H4
Sincere apology vs. insincere apology	− 6.58	1.19	0.14	H4

Panel A, presents mean values and *standard deviations* for participants' shares traded (percentage of shares traded calculated as shares traded/10,000), by condition. Panel B presents my ANCOVA results testing for the effects of organization response manipulations on shares traded. Panel C presents planned contrasts

Table 4 Experiment 2: impact of fraud type and organization response on revenge behavior

Panel A: legal action by condition

Sincere apology	Insincere apology	Scapegoating	No comment	Total
5.49	5.26	5.12	5.59	5.36
1.12	*1.40*	*1.34*	*1.03*	*1.24*
$n=133$	$n=134$	$n=137$	$n=134$	$n=538$

Panel B: One-way ANOVA (*p values two-tailed*)

Source of variation	SS	*df*	MS	*F*-Stat	*p* value	Hypothesis
Organization response	18.55	3	6.18	4.07	< 0.01	
Error	810.62					

Panel C: Planned contrasts (*p* values one-tailed)

Contrast	Contrast	*F*-Stat	*p* value	Associated hypothesis
Scapegoat vs. silence	− 0.47	9.86	< 0.01	
Insincere apology vs. silence	− 0.33	4.84	0.01	
Sincere apology vs. silence	− 0.10	0.45	0.25	H4
Insincere apology vs. scapegoat	0.14	0.86	0.18	
Sincere apology vs. scapegoat	0.37	6.05	0.01	H4
Sincere apology vs. insincere apology	0.23	2.33	0.06	H4

Panel A, presents mean values and *standard deviations* for participants' retaliatory behavior, by condition. Retaliatory behavior is the average of three measures: likelihood of joining a lawsuit, the amount of fine Armano should have to pay, and belief that CEO and CFO should be fired ($\alpha=0.69$). Panel B presents my ANOVA results testing for the effects of my organization response manipulations on retaliatory behavior. Panel C presents planned contrasts

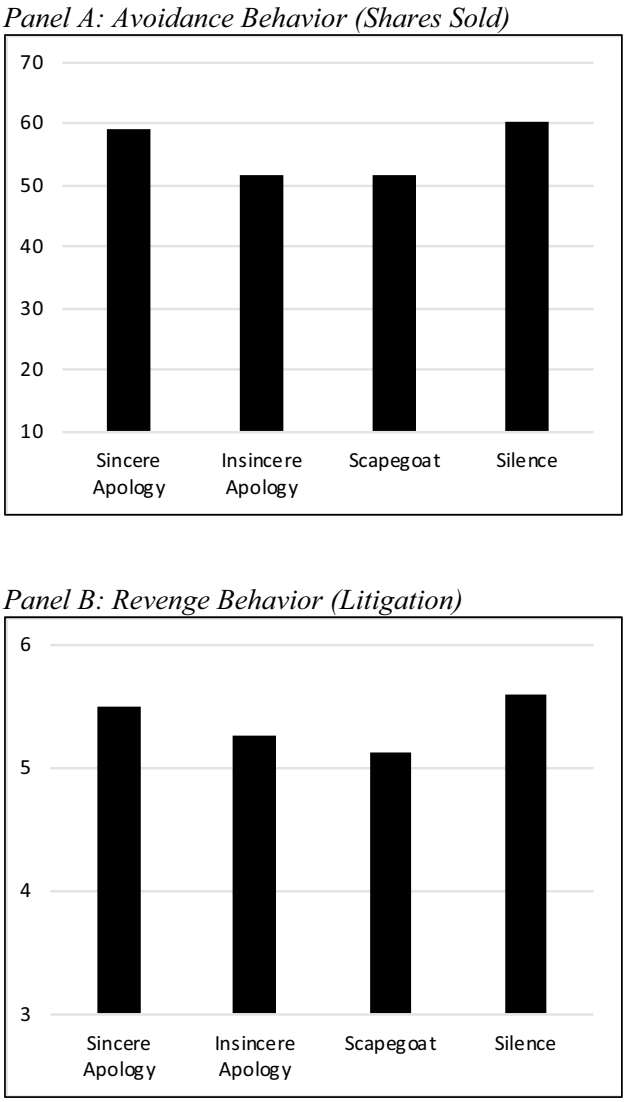

Fig. 2 Experiment 2: impact of organization response on avoidance and revenge behavior. The above panels graphically depict investors' reactions by condition. **a** Captures the percentage of shares sold. For **b**, revenge behavior is the average of three measures: likelihood of joining a lawsuit, the amount of fine Armano should have to pay, and belief that CEO and CFO should be fired ($\alpha = 0.69$)

behavior that are akin to remaining silent. In this case, Table 4, Panel C, reports a significant effect for organization response ($F = 4.07$, $p < 0.01$). Planned contrasts (Panel C) corroborate what Fig. 2 shows. There is a statistically significant higher revenge behavior when firms offer a sincere apology compared to scapegoating ($p = 0.01$) and a marginally statistically significant effect when firms offer a sincere apology compared to an insincere apology ($p = 0.06$). There is no significant difference between a sincere apology and silence ($p = 0.25$). Thus, for revenge behavior, I not only fail to find support for H4, I find the opposite effect of my predictions. A sincere apology backfires and leads to *more* negative behavior towards the firm than other organizational responses that accept less responsibility.

Supplemental Analysis

In my second experiment, I gathered a more robust measure of trustworthiness consistent with what Elliott et al. (2012) used.[13] Untabulated results reveal that just offering any response is significantly better at increasing trustworthiness than silence. There is no difference in trustworthiness between scapegoating and apology response. I also measured participant's affective reactions, expecting the sincere apology to lead to lower negative affect levels, but find no statistically significant difference between conditions.

Discussion

Experiment two tries to counter the pattern of results observed in experiment one by investigating whether an apology's sincerity may influence its effectiveness at disarming a victim's negative behavior after an integrity-based trust violation like a misreporting fraud. I operationalize sincerity not by removing essential components of an apology like acceptance of responsibility but by changing the language to seem more genuine and less scripted. The less sincere apology was impersonal, stating: "To those affected by the recent fraud, we are sorry. Our revenue recognition practices were not consistent with acceptable accounting standards. This will not happen again." The more sincere response expressed more genuine, less boilerplate remorse: "To those affected by the recent fraud, we are deeply sorry. There is no easy way to say it. We engaged in revenue recognition practices inconsistent with acceptable accounting standards, and for that we are genuinely sorry. We promise to right this wrong and work harder than ever to regain your trust and ensure that our focus on short-term gains never gain overshadows our commitment to you, the shareholders."

The results of experiment two partially replicate those of experiment one. The response offered has little effect on the number of shares sold but does influence legal actions. However, I do not find evidence consistent with the idea that a sincere apology could outperform other response strategies. I find that a sincere apology may be *worse* than an insincere apology. That is, a more sincere expression of remorse backfires, presumably because investors see the organization as accepting more responsibility for the fraud.

[13] I use a composite measure of six questions (=0.88) about CEO Dan Athens that capture dimensions of trustworthiness like integrity, competence, honesty, and desire to avoid similar issues in the future.

Conclusion

This paper investigates the efficacy of apology on investor avoidance and revenge behavior after corporate fraud. While prior research has looked at organization-level changes to restore trust after fraud (e.g., Chakravarthy et al., 2014; Cianci et al., 2019; Hersel et al., 2019), these changes take time and neglect immediate actions to temper negative reactions. A timelier response that organizations do not appear to utilize is to apologize for fraud (Racine et al., 2020). However, this may not be surprising given the concern for increased legal liability that comes with apologizing (Kramer & Lewicki, 2010), despite evidence that capital market damages (e.g., lower share price and higher cost of capital) are more severe than regulator-imposed fines (Amiram et al., 2018). Additionally, there is mixed evidence about the effectiveness of apologies compared to alternative responses like denying responsibility or just saying nothing (Claeys et al., 2010; Ferrin et al., 2007; Fuoli et al., 2017; Gerken et al., 2019; Kim et al., 2004, 2006). I contribute to this debate in the literature by drawing on crisis management theory (Coombs, 2007) and trust repair literature (Krylova et al., 2017; Lewicki & Brinsfield, 2017) to understand how integrity-based trust violations like fraud might lead to different investor behaviors depending on the underlying moral violation unique to the nature of the fraud and whether management offers an apology or not.

I find that investors exhibit higher levels of avoidance behavior (selling shares) and revenge behavior (litigation) against organizations with a misstatement fraud compared to organizations with embezzlement fraud. I find that investor's avoidance behavior is dampened when management apologizes for an embezzlement fraud. Conversely, investor's revenge behavior is amplified when management apologizes for a misreporting fraud. This asymmetrical reaction by investors can be at least partially explained by investor's perceptions of the underlying moral norm that has been violated. Specifically, embezzlement frauds are primarily moral violations of stealing, whereas misreporting frauds are primarily moral violations of deception. I also find a positive association between apology sincerity and investor's revenge behavior after a misreporting fraud. That is, investor's revenge behavior increases with a sincerer apology. Thus, my findings suggest that the adage of "just say you're sorry" might not always be the best advice.

While limitations exist with any experiment, I note two important limitations in my study that provide future research opportunities. First, several choices were made when designing the vignettes that may limit the results' generalizability. For example, because the CEO is still with the company, any apology may be seen as cheap talk since investors may expect the CEO and other management to be fired after a fraud is revealed. Thus, future research may consider having an incoming CEO offer an apology (or other response) to signify that the firm is serious about change. Likewise, although I expect investors to react to fraud committed by lower-level employees similarly to the embezzlement by a CFO, as in my study, investors may react differently to fraud perpetrated by employees at different levels of the organization. Some research even suggests that along some dimensions, apologies coming from employees are more successful than apologies coming from the CEO (Hill & Boyd, 2015). Thus, future research might consider altering who commits fraud and who apologizes.

Another important limitation is the medium by which the CEO communicated with investors. For example, Elliott et al. (2012) note that apologies were better received when delivered through video than through text. Sincerity can also come through CEOs' facial expressions when offering an apology, having a significant positive effect on reducing losses in share price during an organizational crisis (ten Brinke & Adams, 2015). Thus, apologies being inadequate responses to reduce revenge behavior after a misreporting fraud, even when the sincerity of the apology is increased, may be negated if the apology is delivered through a medium other than text. As we move to a more online world connected 24/7 through social media, this is undoubtedly an important research area to consider.

Despite these limitations, this study provides theoretical and practical contributions that should be of interest to academics, senior management, public relations officers, corporate lawyers, and anyone charged with protecting and repairing an organization's relationship with investors. Building on previous findings related to trust repair after integrity-based trust violations (e.g., Ferrin et al., 2007; Fuoli et al., 2017; Kim et al., 2004, 2006; Krylova et al., 2017), I find that the apologies effectiveness is conditional on the type of trust violation. While prior research has established clear distinctions in the victim's behavior between integrity and competence or benevolence-based trust violations, my study focuses solely on an integrity violation and digs deeper into the violation's underlying characteristics. I identify the underlying moral norm violated as a distinguishing factor between different types of integrity-based trust violations. Thus, opening up a new area for continued research exploration.

I also build on prior research in accounting that explores the use of apology as a shield from negative investor behavior (e.g., Elliott et al., 2012). However, these studies look at apologies after restatements due to errors, which are a less egregious corporate event than frauds due to deliberate acts. Other research has explored different ways organizations try to repair trust after a fraud (e.g., Chakravarthy et al., 2014).

However, these are focused on large structure changes such as firing the CEO or replacing board members while neglecting how communicating with investors can alter behavior. Thus, I extend these two accounting research streams by exploring how good an apology mitigates an investor's avoidance and revenge behavior following a fraud.

Specific to how revenge behavior was operationalized in my experiments, I find evidence consistent with prior research that investors are willing to engage in costly litigation (Brown & Moser, 2017). The fact that the desire for litigation increased with an apology is not surprising intuitively but certainly is the opposite of what prior research would predict. An abundance of evidence finds that apologies are beneficial in legal contexts as it results in lower assessments of punishment, faster settlements, and lower settlement costs (Cornell et al., 2009; Ho & Liu, 2011a, 2011b; Rasso, 2014). Thus, my findings contribute to this dialogue by providing evidence that apologies are not a panacea for all legal ailments. Further research can explore why apologies seem beneficial in some legal settings but not others.

My results suggest that it may not always be in the company's best interests to offer a full apology for a fraud. Specifically, my evidence suggests that the optimal organizational response to embezzlement is to apologize, and the optimal organizational response to an accounting fraud is to scapegoat. When choosing their response strategy, managers should consider which is of more significant concern—avoidance or revenge behavior. However, these trade-offs cannot be considered in a vacuum as the importance of honest and transparent communication may trump any desire to avoid short-term adverse outcomes. Thus, future research should consider a more holistic victim group that includes not just shareholders (direct victims of fraud) but also other stakeholders such as customers (indirect victims of fraud).

Appendix 1: Fraud Type and Organizational Response Manipulations in Experiment 1

Part A: Crisis Type Manipulations

Accounting Fraud

The SEC announced on Monday that after a month-long investigation into Armano's accounting policies, they find that the company has been artificially inflating revenues. Armano inflated revenue by $25 million by recording sales prior to product shipment and recording sales for expected purchase orders not yet received from third-party retailers, among other methods. The scheme fueled a string of earnings higher than analyst expectations and a strong rise in the company's stock, giving Armano a seemingly strong financial position in an otherwise competitive industry. Armano is required to restate its financial statements for the past three years. There is no word yet on whether the CEO Dan Athens or the company will be charged. A lawyer for Armano couldn't immediately be reached for comment.

Embezzlement

The SEC announced on Monday that after a month-long investigation into Armano's handling of assets, they find that the company's CFO, Mark Patras, has been engaging in fraudulent activities to defraud Armano of $25 million over the past three years. Using secret, unauthorized, and improper loans that were later "forgiven" to maintain his extravagant lifestyle, Mr. Patras has pocketed millions of dollars that was concealed from shareholders, the compensation committee of the board of directors, and even CEO Dan Athens. Because the misappropriated funds have been spent, they cannot be easily recovered by Armano. There is no word yet on whether CEO Dan Athens or the company will be charged. A lawyer for Armano couldn't immediately be reached for comment.

Part B: Crisis Responses to Accounting Fraud

Silence

The associated press has reached out to Armano regarding the accounting fraud that I reported on earlier this week. Armano's CEO Dan Athens released a statement saying that they have "no comment at this time." At this time it is still unknown if Armano or any of its executives will be charged.

Scapegoat

Today Armano's CEO Dan Athens held a press conference to discuss the recent crisis. During his speech Mr. Athens blamed external pressures for the events that lead to the recent accounting fraud. Mr. Athens began his speech by offering the following denial:

> To those affected by the recent crisis, I believe that I have not done anything wrong. I acted in such a way to be consistent with how my international competitors record revenues. Thus I engaged in the same sales recognition practice to make the financial statements comparable to my international competitors. This method of recording sales was approved by my auditors.

During the press conference Mr. Athens also discussed the competitive environment in which Armano currently operates. He discussed how strong international competition has forced Armano to try and adjust quickly to changing consumer preferences. To keep up their dominance in the

confectionery market, they need to keep their dominance in the stock market by consistently growing revenues. This focus on remaining dominant may have lead to the loss of $25 million in shareholder wealth.

At this time it is still unknown if Armano or any of its executives will be charged.

Apology

Today Armano's CEO Dan Athens held a press conference to discuss the recent crisis. During his speech Mr. Athens offered an apology for the events that lead to the recent accounting fraud. Mr. Athens began his speech by offering the following apology:

> To those affected by the recent crisis, I are deeply sorry for what has happened. I recognize that my desire to keep share prices high does not permit revenue recognition practices that are outside of acceptable accounting standards. I allowed my focus on short-term gains to overshadow my attention to proper accounting. I apologize to my shareholders for whom I have misled. I promise to right this wrong and work harder than ever to regain your trust.

During the press conference Mr. Athens also discussed the competitive environment in which Armano currently operates. He discussed how strong international competition has forced Armano to try and adjust quickly to changing consumer preferences. To keep up their dominance in the confectionery market, they need to keep their dominance in the stock market by consistently growing revenues. This focus on remaining dominant may have lead to the loss of $25 million in shareholder wealth.

At this time it is still unknown if Armano or any of its executives will be charged.

PART C: Crisis Responses to Embezzlement

Silence

The associated press has reached out to Armano regarding the embezzlement of money that I reported on earlier this week. Armano's CEO Dan Athens released a statement saying that they have "no comment at this time." At this time it is still unknown if Armano or any of its executives will be charged.

Scapegoat

Today Armano's CEO Dan Athens held a press conference to discuss the recent crisis. During his speech Mr. Athens blamed internal controls recommended by the company's auditors. Mr. Athens began his speech by offering the following denial:

> To those affected by the recent crisis, I believe that I have not done anything wrong. I share your feelings towards Mark Patras who was able to hide the money he was embezzling from me and the board of directors. The failure of my internal controls, controls that were approved by my auditors, allowed the embezzlement to happen.

During the press conference Mr. Athens also discussed the competitive environment in which Armano currently operates. He discussed how strong international competition has forced Armano to try and adjust quickly to changing consumer preferences. To keep up their dominance in the confectionery market, they need to keep their dominance in the stock market by consistently growing revenues. This focus on remaining dominant may have lead to the loss of $25 million in shareholder wealth.

At this time it is still unknown if Armano or any of its executives will be charged.

Apology

Today Armano's CEO Dan Athens held a press conference to discuss the recent crisis. During his speech Mr. Athens offered an apology for the events that allowed an executive to embezzle funds. Mr. Athens began his speech by offering the following apology:

> To those affected by the recent crisis, I are deeply sorry for what has happened. The company's weak internal controls allowed the former CFO, Mark Patras, to embezzle company funds. I allowed my focus on the business to overshadow my attention to important fraud control activities. I apologize to my shareholders to whom I have let down. I promise to right this wrong and work harder than ever to regain your trust.

During the press conference Mr. Athens also discussed the competitive environment in which Armano currently operates. He discussed how strong international competition has forced Armano to try and adjust quickly to changing consumer preferences. To keep up their dominance in the confectionery market, they need to keep their dominance in the stock market by consistently growing

revenues. This focus on remaining dominant may have lead to the loss of $25 million in shareholder wealth.

At this time it is still unknown if Armano or any of its executives will be charged.

Appendix 2. Organizational Response Manipulations in Experiment 2

The Securities and Exchange Commission announced on Monday that after a month-long investigation, they find that CEO Dan Athens and CFO Mark Patras intentionally deceived investors by misreporting financial information. Over a period of three years, Mr. Athens and Mr. Petras inflated revenues by $25 million by recording sales prior to product shipment and recording sales for expected orders not yet received from third-party retailers, among other methods. The improper revenue recognition practices fueled a string of earnings reports higher than analyst expectations resulting in a strong rise in the company's stock, giving Armano a seemingly strong financial position in an otherwise competitive industry. Armano is required to restate its financial statements for the past three years.

Silence

The associated press reached out to Armano regarding the fraud. Armano's CEO Dan Athens released a statement saying: "I have no comment at this time."

Scapegoating

The associated press reached out to Armano regarding the fraud. Armano's CEO Dan Athens released a statement saying: "To those affected by the recent fraud, I believe I have not done anything wrong. My revenue recognition practices were approved by my auditor."

Insincere Apology

The associated press reached out to Armano regarding the fraud. Armano's CEO Dan Athens released a statement saying: "To those affected by the recent fraud, I are sorry. My revenue recognition practices were not consistent with acceptable accounting standards. This will not happen again."

Sincere Apology

The associated press reached out to Armano regarding the fraud. Armano's CEO Dan Athens released a statement saying: "To those affected by the recent fraud, I are deeply sorry. There is no easy way to say it. I engaged in revenue recognition practices inconsistent with acceptable accounting standards, and for that I are genuinely sorry. I promise to right this wrong and work harder than ever to regain your trust and ensure that my focus on short-term gains never again overshadows my commitment to you, the shareholders."

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the studies.

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