

The Effect of an Intentional Strategy on Auditors' Identification of Fraud Risks

Dr. Chad A. Simon
Assistant Professor
Department of Accounting
College of Business
University of Nevada, Las Vegas
chad.simon@unlv.edu
702.895.3768

December 2008

This study has benefited from guidance from my dissertation committee: Michael Bamber (chair), Linda Bamber, Tina Carpenter, Adam Goodie, and Jacqueline Hammersley. I have also received valuable feedback from two anonymous reviewers for the 2009 AAA Auditing Mid-Year meeting, as well as Mark Beasley, Joe Brazel, Andy Call, Jeremy Griffin, Sean McGuire, Bill Messier, Jason Smith, and David Wood. I also appreciate the feedback I have received on this study from workshop participants at the University of Georgia, the University of Massachusetts, Amherst, the University of Nebraska, the University of New Hampshire, the University of Nevada, Las Vegas, North Carolina State University, and Virginia Polytechnic and State University. I thank Ann Gamble for her help coding the data and Stephen Asare and Arnie Wright for allowing me to use their instrument. Finally, I am grateful for the auditors who participated in this study.

The Effect of an Intentional Strategy on Auditors' Identification of Fraud Risks

ABSTRACT: Under SAS 99, auditors should identify their clients' fraud risks and plan audit procedures to address those risks (AICPA 2002). I experimentally investigate ways to help auditors identify relevant fraud risks (i.e., ways management is most likely committing fraud). I then test whether auditors who identify more relevant fraud risks subsequently identify more audit procedures that target an actual fraud. I find that auditors who are prompted to link client information (red flags and analytical procedure results) to client management's goals identify a higher number of relevant fraud risks than auditors who are not prompted to perform this process. The process of linking information to management's goals during audit planning is based on Johnson et al.'s (e.g., 1993) work, which partly stems from Dennett's (1987) "intentional strategy." Finally, auditors who identify a higher number of relevant fraud risks subsequently identify more procedures that target fraud, consistent with AICPA (2003) guidance.

Key Words: *SAS 99, Fraud Risks, Audit Procedures, Intentional Strategy.*

The Effect of an Intentional Strategy on Auditors' Identification of Fraud Risks

I. INTRODUCTION

Statement on Auditing Standards No. 99, *Consideration of Fraud in a Financial Statement Audit*, requires auditors to identify their clients' fraud risks – i.e., to identify ways they believe their clients could be committing financial statement fraud (AICPA 2002). Auditors identify these risks based on red flags (events or circumstances that increase the likelihood that fraud is occurring), analytical procedures, client inquiries, and other information (AICPA 2002).¹ In effect, SAS No. 99 requires auditors to determine how and where they believe fraud might be occurring and then select procedures to address those risks (AICPA 2002; AICPA 2003). However, auditors may have difficulty performing these tasks because they lack extensive experience with financial statement fraud and they do not necessarily identify more effective procedures when they assess overall fraud risk higher (e.g., Loebbecke et al. 1989; Johnson et al. 1992; Asare and Wright 2004). In this study, I experimentally investigate potential ways to enhance auditors' ability to perform the SAS No. 99 task of identifying a client's fraud risks. I also test whether auditors who identify more relevant fraud risks subsequently identify more audit procedures that target fraud.

I first investigate whether auditors identify more relevant fraud risks if they tie client information to client management's goals. In a series of papers, Johnson et al. (e.g., 1992, 1993) propose a fraud detection process, stemming from Dennett's (1987) "intentional strategy," that

¹ Red flags can be defined as general events or circumstances that reveal management's incentives and opportunities to commit fraud and management's attitude toward fraud and their presence generally increases the likelihood (but does not ensure) that fraud is occurring. (AICPA 2002). In contrast, in this study I consider fraud risks to be the ways an auditor believes management may actually be carrying out fraud (AICPA 2002). I discuss this difference more fully in the next section.

basically requires auditors to link relevant information to management's goals.² For instance, an auditor may find that a client has drastically increased credit limits to customers without recognizing a higher allowance for bad debt. The auditor can use this strategy to tie this information to a client's goal (e.g., to increase earnings) and thus recognize the fraud risk that the client may *intentionally* increase customer credit limits without recognizing sufficient bad debt.

I also investigate whether requiring auditors to explicitly form and document independent expectations for a client's reported results (e.g., analytical procedure results) enhances their use of an intentional strategy. Auditors should form expectations on their own without being told to do so, given current guidance on analytical procedures (e.g., AICPA 1988). However, prior research is consistent with auditors benefiting from instructions to carry out this step (McDaniel and Kinney 1995). Furthermore, by forming independent expectations, auditors may recognize more discrepancies in the client's reported results (Kinney and Uecker 1982). If this holds, they can link these additional discrepancies to the client's goals when they use an intentional strategy.

Finally, I examine whether auditors who identify more relevant fraud risks select more effective audit procedures. Prior experimental research fails to find an association between auditors' overall fraud risk assessments and the effectiveness of their planned procedures (Asare and Wright 2004). One explanation for this result is that auditors can set overall fraud risk high without adequately understanding how and where management is committing fraud. However, if auditors effectively determine how and where fraud is most likely occurring, they are in a better

² Management can adopt a variety of goals, including financial reporting goals (e.g., beat analyst expectations), strategic goals (e.g., increase customer satisfaction), public relations goals (e.g., decrease harmful emissions), etc. These goals may or may not lead management to commit financial statement fraud (e.g., it is unlikely that management can commit financial statement fraud in order to decrease harmful emissions or increase customer satisfaction). In this study I have participants focus on management goals that could lead management to commit fraud.

position to choose procedures that target fraud (AICPA 2003). Thus, I expect that auditors who effectively identify fraud risks will identify more relevant procedures.

It is important to investigate ways to enhance auditors' ability to identify relevant fraud for at least two reasons. First, auditors should base their audit procedures on the fraud risks they identify (AICPA 2002). If auditors fail to identify procedures that target fraud and thus do not detect fraud, they face adverse consequences (e.g., Palmrose 1987). Leaders in the profession also argue that auditors need to close the gap between what investors expect and what auditors provide, including finding ways to improve auditors' ability to detect fraud (Nusbaum 2007) and acknowledge that auditors must perform procedures that will detect fraud (Reilly 2007). I investigate ways to enhance auditors' ability to identify specific fraud risks, which I expect will facilitate their selection of procedures that target fraud.

Second, auditors may have a difficult time identifying relevant fraud risks because they often lack extensive direct experience with fraud (e.g., Loebbecke et al. 1989), which limits their opportunities to develop an understanding of information patterns that reliably suggest fraud is occurring (Johnson et al. 1992).³ Management also conceals fraud and deceives auditors, which requires auditors to think and act strategically to detect fraud (Nieschwietz et al. 2000; AICPA 2002; Wilks and Zimbelman 2004a). Finally, while auditors use different types of information to identify fraud risks (AICPA 2002), auditors may struggle to successfully integrate information (Moeckel 1991). If auditors are unable to overcome these difficulties they will not be able to

³ I thank an anonymous reviewer for pointing out that most auditors will be familiar with fraud, despite their general lack of extensive direct fraud experience, because of the recent massive frauds that have occurred. Nevertheless, it is unclear how being aware of the occurrence of these large frauds impacts auditors' abilities to effectively identify relevant fraud risks. For instance, even with the press that these massive frauds have received, auditors have not had access to all of the client information (e.g., working papers) that is available during a typical audit engagement, which could limit the benefits of being aware of these widely-publicized frauds.

discern the most likely ways that management is committing fraud (i.e., identify relevant fraud risks), which will ultimately impair their ability to identify effective audit procedures.

Using a process that stems from Dennett's "intentional strategy," Johnson et al. (1992, 1993, and 2001) have developed an approach to financial statement fraud that asserts that focusing on managements' goals can help auditors develop insights about fraud. I adapt the intentional strategy to the task of identifying fraud risks during audit planning and expect that this approach will help auditors identify relevant risks because it allows them to use SAS No. 99-relevant cues they are familiar with (e.g., fraud red flags and analytical procedures). This strategy also gives auditors a means (management's goals) to evaluate the inconsistencies (e.g., analytical procedure results that deviate from their expectations) or other cues they find (Johnson et al. 1992, 1993).

I find that auditors who are prompted to use an intentional strategy identify a higher number of relevant fraud risks (i.e., risks that target an actual fraud) but do not identify a higher number of total fraud risks than auditors who are not prompted to use this approach. Taken together, these results suggest that when auditors are link relevant information to management's goals, they are better able to 1) identify how and where management is most likely committing fraud and 2) focus on relevant fraud risks rather than simply generating a higher number of fraud risks. I do not find that requiring auditors to explicitly form and document independent expectations for a client's reported results enhances the benefits of using an intentional strategy.

My results further suggest that, on average, auditors who identify a higher number of relevant risks identify a higher number of relevant procedures (i.e., procedures that target fraud) and a higher percentage of relevant procedures. Consistent with AICPA (2003) guidance, these findings suggest that auditors who can effectively identify how and where the client is most

likely committing fraud are in a better position to identify audit procedures that target fraud.

This study makes several important contributions. The fraud literature has primarily focused on auditors' use of fraud red flags and their overall fraud risk assessments but has largely ignored auditors' ability to identify specific fraud risks during audit planning. For instance, researchers have investigated auditors' weighting or ranking of red flags (e.g., Hackenbrack 1993) and whether experience affects auditors' overall assessments of fraud risk (Knapp and Knapp 2001).⁴ However, SAS No. 99 emphasizes that auditors should focus on identifying fraud risks – the ways that management is committing fraud – rather than simply assessing fraud risk (AICPA 2002; AICPA 2003). I extend the fraud literature by demonstrating one way (the intentional strategy) to enhance auditors' ability to identify fraud risks during audit planning. The intentional strategy benefits are also consistent with Wilks and Zimbelman's (2004a) argument that standards should direct auditors to think and act strategically.

I also extend work Johnson et al.'s (e.g., 1992, 1993, and 2001) work on the intentional strategy in three important ways. First, this is the first study to systematically manipulate whether auditors are prompted to use an intentional strategy. Second, I examine whether the intentional strategy can improve the judgments of relatively inexperienced auditors (Johnson et al. (1992, 1993) look at audit partner judgments). It is important to look at less experienced auditors' decisions (e.g., seniors) because these auditors are often involved in initial risk and procedure judgments (Abdolmohammadi 1999) and prior research suggests less experienced auditors do not perform fraud tasks as well as their experienced counterparts (e.g., Knapp and

⁴ One exception to this work is Carpenter (2007), who finds that brainstorming helps auditors recognize a higher number of quality fraud ideas. Brainstorming ideas are directly related to fraud risks because both ideas and fraud risks represent auditors' understanding of how and where fraud is most likely occurring and the brainstorming session is one source auditors use to identify the full set of fraud risks (AICPA 2002). Studies by Johnson et al. (e.g., 1992) also involved the identification of fraud risks during concurring partner reviews by experienced practitioners.

Knapp 2001). Third, I look at the effect of an intentional strategy during audit planning while prior studies primarily investigate whether auditors use this type of approach during concurring partner reviews (Johnson et al. 1992). It is important to examine the effect of this strategy during planning because to the extent it helps during planning, auditors should be in a better position to identify procedures that will target and ultimately uncover fraud at an earlier audit stage.

Experimental research has also examined the association between auditors' overall fraud risk assessments and audit procedures with results generally suggesting that auditors extend but do not change the nature of audit procedures or identify more effective procedures when they assess overall fraud risk higher (Zimbelman 1997; Glover et al. 2003; Asare and Wright 2004). I extend this stream of literature by finding – consistent with SAS No. 99 (AICPA 2002) – that auditors who identify more relevant fraud risks identify more effective audit procedures on average. In other words, this study finds that if auditors can develop better insights about how fraud is most likely occurring, they are more likely, on average, to identify tests that will target fraud, which is consistent with SAS No. 99 implementation guidance (AICPA 2003). This extension is important because it suggests audit researchers and practitioners should focus on helping auditors identify relevant fraud risks rather than primarily focusing on auditors' overall risk assessments if they want to improve auditors' procedure decisions.

This study proceeds as follows. In section 2, I discuss relevant theory and develop my hypotheses. I provide an overview of my research method in section 3 and I discuss the tests of my hypotheses in section 4. I offer concluding remarks in section 5.

2. THEORY AND HYPOTHESES

Consideration of Fraud During the Audit

When auditors consider the possibility of fraud under SAS No. 99, they perform several steps including: 1) gathering relevant information (e.g., determining the client's fraud red flags, performing analytics, etc.) 2) identifying fraud risks⁵ based on the gathered information, and 3) adjusting the audit plan to address identified risks (AICPA 2002). Figure 1 summarizes these steps; this study primarily focuses on the identification of fraud risks (phase II in Figure 1).

[Insert Figure 1 Here]

Under SAS No. 82, the previous fraud standard, auditors were primarily responsible for explicitly assessing a client's overall fraud risk and then adjusting the audit plan to address this overall assessment (AICPA 1997; Zimbelman 1997). While an overall fraud assessment may help with some planning decisions (Asare and Wright 2004), it does not necessarily reveal whether auditors have an adequate understanding of how and where fraud is most likely occurring. As a result, auditors can assess overall fraud risk high when fraud is present without understanding how a client is most likely committing fraud.

At this point it is important to differentiate between red flags and fraud risks. Red flags can be defined as general events or circumstances that reveal management's incentives and opportunities to commit fraud and management's attitude toward fraud (AICPA 2002). While the presence of red flags may increase overall fraud risk, they are noisy signals because their presence does not necessarily mean fraud is occurring (AICPA 2002). Furthermore, given that red flags are general conditions, they do not reveal how management is most likely to

⁵ The clearest definition of fraud risks in SAS No. 99 comes from a discussion of the fraud brainstorming session: "*Discussion among engagement personnel regarding the risks of material misstatement due to fraud*. This section requires...audit team members to consider **how and where the entity's financial statements might be susceptible to material misstatement due to fraud...**" (AICPA 2002, 2, emphasis added).

specifically commit fraud.⁶ In contrast, fraud risks indicate the ways an auditor believes management may be committing fraud (AICPA 2002); these risks allow auditors to reveal their understanding of how management could most likely be committing fraud. Auditors combine red flags with other information to determine a client's fraud risks (AICPA 2002). Table 1 provides definitions and examples of red flags, overall fraud risk assessments, and fraud risks.

[Insert Table 1 Here]

Fraud Risk Identification

Auditors face at least two major challenges when they identify specific, relevant fraud risks. First, auditors' judgments are influenced by patterns of information and patterns may reveal risks that are not apparent in individual results (Brown and Solomon 1991; Hammersley 2006; Bell and Wright 1997). Using patterns is consistent with SAS No. 99 (AICPA 2002) guidance to gather information from a variety of sources to identify fraud risks. However, as explained by Johnson et al (1992), auditors may find it difficult to interpret this large set of information because they have limited direct experience with fraud (Loebbecke et al. 1989) and thus limited knowledge of relevant information patterns that reliably suggest fraud is occurring. Furthermore, auditors, particularly those with less experience, may struggle to integrate information (Moeckel 1990; 1991). If auditors cannot effectively integrate or combine relevant information, it will be difficult for them to effectively infer risks from the information they gather.

⁶ For example, Johnson et al. (1993, 473) point out fraud incentives "are not necessarily connected with the specific manipulation used for creating the deception." To illustrate, consider this red flag: "Significant portions of [management's] compensation [is] contingent upon achieving aggressive targets for stock price, operating results, financial position, or cash flow" (AICPA 2002, 85). While this red flag highlights an incentive to commit fraud, it does not reveal the methods (e.g., overstate revenues or understate expenses) they will use to commit fraud or the specific accounts (e.g., accounts receivable or R&D expense) they will to manipulate the accounting numbers.

The second challenge auditors face when they identify fraud risks is that management will attempt to deceive auditors, thus requiring auditors to strategically evaluate and interpret the information when trying to detect fraud (e.g., Johnson et al. 1993; Nieschwietz et al. 2000; Wilks and Zimbelman 2004a). Zimbelman and Waller (1999) provide initial evidence consistent with individuals being able to act strategically. Still, while auditors should strategically alter the nature of procedures to address fraud risks (AICPA 2002), prior research suggests that auditors do not alter the nature of their planned audit procedures or identify more effective procedures when they assess overall fraud risk higher (e.g., Glover et al. 2003; Asare and Wright 2004).

Intentional Strategy

Auditors may be able to overcome these challenges by combining and interpreting SAS No. 99-relevant information in light of client management's goals. Academics from a variety of disciplines assert that focusing on an individual's goals can provide insights on the actions – including deceptive actions – that individuals have taken or will take (e.g., Mawby and Mitchell 1986; Dennett 1987; Johnson et al. 1992). These points are relevant to financial reporting because management often adopts reporting goals and will thus have to take action – including potentially fraudulent action – in order to achieve their goals. For instance, management will often adopt the goal of meeting or beating analyst expectations in order to increase a stock price (e.g., Bartov et al. 2002; Kasznik and McNichols 2002). Importantly, individuals must determine which actions they will take to obtain a goal and modify their actions if they initially fail to obtain a goal (Abraham and Sheeran 2003). Therefore, if managers are unable to achieve their goals using legitimate practices (and their goals are important enough), they can commit fraud to meet their reporting goals.

In a series of papers, Johnson et al. (e.g., 1992, 1993, and 2001) develop a theoretical approach to fraud detection that suggests auditors should use client management's goals to develop insights about potential fraud. Their work stems in part from Dennett's (1987) "intentional strategy." In order to perform the initial steps of an intentional strategy, auditors form expectations for the client's reported results and look for "inconsistencies," which occur when their expectations for a client's reported results differ from the actual reported results; these inconsistencies signal possible management manipulations (Johnson et al. 1992, 1993; 2001; Grazioli et al. 2006). Auditors then determine which inconsistencies or other information are consistent with management achieving its goals (Johnson et al. 1993, 2001) and thus determine whether risks of fraud are present (Johnson et al. 1992).

Despite the appeal of this strategy, there is a lack of direct evidence on the extent to which this strategy can help auditors, particularly less experienced auditors who will be making risk and procedure decisions while planning an engagement (Abdolmohammadi 1999). Importantly, all of my participants (senior and staff level) have relatively less experience than the partner participants in the Johnson et al. (e.g., 1992) studies. While a computer model using rules consistent with this strategy effectively detects fraud, an analysis of partners performing concurring partner review tasks suggests that most partners do not appear to consistently use an intentional strategy to detect fraud (Johnson et al. 1992). Moreover, there is no evidence that less experienced auditors (e.g., seniors and staff) can use this strategy to enhance their performance of audit planning tasks. Finally, Grazioli (2004, 169) states that while this strategy predicts that directing people to consider others' goals will help reveal deceit, "this claim has not yet been empirically evaluated."⁷ My study tests whether prompting auditors to use an approach based

⁷ Johnson et al. (1993) do attempt to prompt two partner-level participants to consider factors related to the intentional strategy when these participants are not able to initially detect fraud.

on intentional strategy principles can improve their performance of the SAS No. 99 planning task of identifying fraud risks.

I expect auditors to benefit from using an intentional strategy-based approach when they identify fraud risks during audit planning. An intentional strategy can allow auditors to use SAS No. 99 cues they are familiar with and often use during audit planning, such as fraud red flags, and analytical procedures.⁸ An intentional strategy also gives auditors a means (management's goals) to evaluate inconsistencies or other information during the audit (e.g., analytical procedure results that deviate from their expectations) (Johnson et al. 1992, 1993). I therefore propose the following hypothesis (all hypotheses are stated in the alternative form):

H1: Auditors who are prompted to use an intentional strategy will be more effective at identifying fraud risks than auditors who are not prompted to use this strategy.

Forming and Documenting Independent Expectations

Auditors can form expectations about client information in a variety of settings, including performing analytics (McDaniel and Kinney 1995) and generating explanations for changes in accounting numbers (Koonce 1993).⁹ However, auditors may “anchor” on their clients' reported numbers and fail to adequately revise this anchor when they form analytic expectations, meaning that auditor expectations can be unduly close to the client's reported numbers (Tversky and Kahneman 1974; Kinney and Uecker 1982). If auditors anchor on a client's reported numbers,

⁸ Auditors will be familiar with fraud red flags because they use them during the audit (Shelton et al. 2001) and they will be familiar with analytical procedures, which they perform during planning and substantive testing (Hirst and Koonce 1996). Auditors are often familiar with management's potential “intentions,” (Johnson et al. 1992).

⁹ Auditors can form these expectations based on information from the client's industry or prior period results, as well as relations among financial variables (AICPA 1988; Erickson et al. 2000). SAS No. 99 (AICPA 2002) also directs auditors to use analytical procedures as a basis for identifying fraud risks. However, PCAOB inspections (e.g., PCAOB 2006, 2007a, 2007b) find that auditors do not always effectively perform analytics. One potential way to improve auditors' performance of analytics is to require them to form independent expectations for the client's reported results and compare these expectations with the client's reported numbers (AICPA 1988; 2002; McDaniel and Kinney 1995). I thus use the analytic context to test the impact of forming expectations in a fraud setting.

audit risk can increase because auditors may be more likely to inappropriately accept the client's reported results (Kinney and Uecker 1982; Biggs et al. 1995; Bell and Wright 1997).

Given the potential benefits of forming independent expectations and the fact that audit guidance (AICPA 1988) instructs auditors to form expectations, auditors should form independent expectations without being explicitly told to do so. However, McDaniel and Kinney (1995) find that auditors who are instructed to document their expectations are more likely to investigate accounts that contain a misstatement. If auditors continue to perform better when they are required to form and document independent expectations, this requirement may enhance the benefits of using an intentional strategy because auditors who use this strategy identify inconsistencies in the client's reported results (Johnson et al. 2001). If auditors can increase the number of relevant inconsistencies they recognize by forming and documenting independent expectations, these additional inconsistencies can then be linked to management's goals. Therefore, even though auditors should be forming expectations in order to comply with auditing standards (AICPA 1988), I predict that requiring auditors to form and document independent expectations will interact with using an intentional strategy to help auditors identify relevant fraud risks. This leads to the following ordinal interaction hypothesis (see Figure 2):

[Insert Figure 2 Here]

H2: The benefit auditors receive from being prompted to use an intentional strategy will be greater when the auditors first formulate and document their independent expectations for a client's reported results.

Audit Procedures

Several studies have investigated auditors' procedure decisions in fraud settings and find that auditors who assess overall fraud risk higher are not more likely to change the nature of

procedures or to identify more effective procedures (Zimbelman 1997; Glover et al. 2003; Asare and Wright 2004). One explanation for these results is that auditors may not be aware of how to effectively alter audit procedures for fraud (Zimbelman 1997). An alternative explanation is that auditors may assess overall fraud risk high without understanding how and where fraud is most likely occurring. Even when auditors assess overall fraud risk high when fraud is present, they may not adequately understand how fraud is most likely occurring. Thus, auditors should seek to determine how and where fraud is likely occurring before selecting procedures (AICPA 2003).

One potential way to improve the link between auditors' fraud risk assessments and their selection of audit procedures is to decompose the overall fraud risk assessment into individual fraud risks. Johnson et al. (1992, 180) argue that the overall risk of fraud can be broken down to a point that allows "a direct interpretation and an explanation of the observed inconsistencies." For example, assume an auditor has assessed overall fraud risk high at the financial statement level. The auditor can break this overall assessment down into the individual risks (e.g., identified risks could include potentially fraudulent channel stuffing or credit approvals) that contribute to the overall fraud risk. Auditors can then identify procedures to address the specific risks they have identified.

Results of prior studies provide mixed results on whether auditors benefit from decomposing their judgments. For instance, Jiambalvo and Waller (1984) find that auditors' overall assessments of acceptable risk are not significantly different if they directly assess this risk or separately assess each risk component. In contrast, Zimbelman (1997) finds that decomposing misstatement risk assessments into error and fraud components increases the attention auditors pay to fraud-related information. Finally, Wilks and Zimbelman (2004b) find that auditors are more responsive to differences in fraud opportunity and fraud incentive risks

when they expect to separately assess components of fraud risk (attitude, opportunity, and incentive) before they make an assessment of overall fraud risk. However, their result only holds in a lower risk scenario (Wilks and Zimbelman 2004b), which suggests that circumstances may affect whether auditors benefit from decomposing this judgment.

SAS No. 99's (AICPA 2002) guidance that auditors should select procedures based on the fraud risks they identify essentially decomposes procedure decisions down from the overall risk level to the specific risk level. Given that decomposition is not always helpful, it is an empirical question whether auditors will benefit from selecting procedures to address specific fraud risks, particularly given prior results showing that they are unlikely to improve procedures when they assess overall fraud risk higher (e.g., Asare and Wright 2004). SAS No. 99 guidance (AICPA 2003) argues that auditors should determine how and where fraud is occurring before selecting audit procedures. Thus, I anticipate that when auditors identify fraud risks that relate to fraud they will be able to identify procedures that target fraud, which leads to my final hypothesis:

H3: Auditors who are more effective at identifying relevant fraud risks will be more effective at identifying relevant fraud-related audit procedures.

3. RESEARCH METHOD

Participants

Eighty-eight practicing auditors participated in this study. I drop three participants from the analysis because they did not follow instructions.¹⁰ As a result, eighty-five responses are used in the analysis. The remaining eighty-five participants have an average of 31.79 months of audit experience (median = 27 months), 83 percent are Big 4 auditors, and 56 percent are

¹⁰ In untabulated results, including these participants does not significantly alter the inferences drawn in this study.

CPAs.¹¹ These participants either completed the instrument during a training session (37.6%) or were given the instrument through a firm contact and returned it to the contact (62.4%).

Additionally, these participants have encountered an average of 3.2 material errors in the previous three years and 9.4 percent of the participants have experienced a material fraud in the previous three years. Demographic information for these participants is found in Table 2.

[Insert Table 2 Here]

Research Design and Task

This study uses a 2 x 2 between-participant design to test H1 and H2. I first manipulate whether participants explicitly form and document independent expectations for a client's reported results. I also manipulate whether participants are prompted to use an intentional strategy before they identify the client's fraud risks. I then use regression analysis to test H3. The primary dependent variables for my analysis are the number of relevant fraud risks auditors identify (H1 and H2) and the number of relevant procedures they identify (H3). The independent and dependent variables are discussed in detail below.

I modify Asare and Wright's (2004) experimental instrument for this study. This case was developed with the help of experienced practitioners and is based on a Security and Exchange Commission (SEC) Accounting and Auditing Enforcement Release (AAER) of a fraudulent company (SEC 1997; Asare and Wright 2004). The fraud was centered on a marketing program that essentially resulted in the company pushing their product to distributors. Individuals at the company used a variety of tactics that ultimately contributed to the fraud [e.g., side agreements with distributors, not following the appropriate credit approval process, etc. (see SEC 1997)]. I pilot tested the instrument with 23 Big 4 audit seniors and used the results of the

¹¹ Five of the these participants have < one year of auditing experience. When these inexperienced auditors are excluded, participants who are prompted to use an intentional strategy still identify a more relevant risks ($p = 0.03$).

pilot to modify the instrument before running the study. Pilot study participant responses are not included in the study's analysis.

Figure 3 illustrates the steps participants take to complete the case. They begin by reading background information on the client. Auditors then receive 1) a list of fraud red flags that are present and absent at the client and 2) analytical procedure results (financial ratios) that are based on the client's actual reported numbers. Participants who explicitly form expectations document their expectations for the client's current period results before seeing the reported results, while the others are not required to document these expectations. Auditors who use an intentional strategy complete four steps (discussed below) to prompt them to use this strategy while the others are not asked to complete these steps. Next, participants assess overall fraud risk, list the client's fraud risks, and list audit procedures to address each of the risks they identify. Participants finish by responding to other materials, including demographic questions.

Independent Variables

I manipulate two independent variables for my tests of H1 and H2. The first manipulates whether auditors explicitly form and document their expectations for analytical procedures for the current annual period results. Auditors in this condition receive a set of eight financial ratios, which have been reviewed, that are based on the client's performance through the end of the third quarter in the current period.¹² Based on the information in the case, participants are asked to document whether they expect each ratio at the end of the current period (i.e., the annual

¹² The ratios were the current and quick ratios, the age of inventory (360 days / inventory turnover) and age of A/R (360 days / A/R turnover) ratios, uncollectible A/R (allowance / total A/R), gross and profit margins, and return on equity. The age of inventory and age of A/R were calculated based on client data through the third quarter, meaning that the annual numbers would include more COGS and sales and lead to lower ratios for both of these figures, thus providing a non-fraud explanation for the drops in these ratios in the case. However, participants were not told this and could have assumed this was not the case. It's also important to note that a drop in the age of inventory ratio is consistent with the fraud in the case but a drop in the age of A/R ratio is likely inconsistent with the fraud in the case. Finally, all participants in the case received the same information (the same ratios for the same time periods).

results for the current period) to be significantly higher (↑), significantly lower (↓), or similar to (⇒) the third quarter ratios. Once they document their expectations, they transfer these expectations to a subsequent page. This page lists the same eight financial ratios for three separate periods – the prior annual period (audited), the current period third quarter (reviewed), and the current annual period (unaudited) as well as space for the participants to include their expectations. The remaining participants receive these ratios for all three periods without being instructed to form and document expectations for the current annual period. Thus, all participants receive the same financial ratios for the same periods when completing the case but those who form and document expectations document their expectations before seeing the current period annual results.

I also manipulate whether auditors complete four steps that aim to prompt them to use an intentional strategy-based approach before identifying the client's fraud risks. When auditors use an intentional strategy, they begin by looking for inconsistencies in the client's reported results (e.g., Johnson et al. 2001). I operationalize this step by asking participants to refer to the analytical procedure results they previously encountered and to indicate which of these results deviate from their expectations. Next, auditors link relevant client information to client management's goals (Johnson et al. 1993, 2001). In order to operationalize this step, I ask participants to identify and list up to three goals that they believe could lead management to commit fraud. They then list the fraud red flags and analytical procedure results that are consistent with each management goal they listed. The other participants are not asked to not complete these steps. As a result, while participants who are prompted to use this approach complete additional steps, they do not receive more information than the other participants.

Dependent Variables

My primary dependent variable for H1 and H2 is the number of unique relevant fraud risks auditors identify. In order to collect this variable, I ask participants to list the specific ways they believe management could be committing fraud. Along with an independent coder who has three years of Big 4 audit experience, we code participant responses as relevant if they relate to (i.e., target) the actual fraud that the case is based on and we mutually resolve any differences. Coding responses as relevant if they relate to the fraud in the case is consistent with Carpenter's (2007) coding of brainstorming ideas and Asare and Wright's (2004) coding of audit procedures. Importantly, the number of relevant fraud risks identified also serves as the primary independent variable of interest for H3.

I use the total number of risks identified as an alternative dependent variable for H1 and H2. I include this alternative because counting the number of relevant risks is potentially problematic because an intentional strategy approach may lead auditors to simply list a higher number of total (relevant and irrelevant) ways management could be committing fraud.

Regression Analysis

In order to test H3, I regress the number of relevant procedures participants identify on the number of relevant risks they identify, their overall fraud risk assessments, and several control variables. I control for other variables that could influence the number of relevant procedures auditors identify because this analysis is no longer based on randomized conditions.

The regression I estimate to test H3 is found in equation 1:

$$\begin{aligned} RelProcs = & \alpha + \beta_1 RelRisks + \beta_2 OverallFrRisk + \beta_3 Experience + \beta_4 RevRecExperience \\ & + \beta_5 Industry + \beta_6 Big4 + \beta_7 Training + \beta_8 Time + \varepsilon \end{aligned} \quad (1)$$

Where:

RelProcs is the number of procedures that participants came up with and listed that target the actual case fraud.

RelRisks is the number of risks that participants came up with and listed that relate to the actual case fraud.

OverallFrRisk is an auditor's overall fraud risk assessment on a scale from 0 (Certain fraud does not exist) to 100 (Certain fraud does exist).

Experience is an auditor's number of months of auditing experience.

RevRecExperience is an auditor's revenue recognition experience on a scale from 0 (No prior experience) to 10 (Deal with this issue often).

Industry is an indicator variable for whether an auditor primarily works in an industry related to the case study (e.g., consumer products or manufacturing) (1 = yes, 0 = no).

Big4 is an indicator variable for whether an auditor is from a Big 4 firm (1 = yes, 0 = no).

Training is an indicator variable for whether an auditor completes the case in a training session (1 = yes, 0 = no).

Time is the number of minutes an auditor spends completing the case.

My primary dependent variable for Hypothesis 3 is the number of unique relevant procedures auditors identify. I collect this variable by asking participants to list up to three specific audit procedures to address each of the fraud risks they identify. Along with the same independent coder mentioned previously, we code participants' procedures as relevant if the procedures would effectively target the actual fraud that occurred in the case and we mutually resolve any differences. We derive the list of effective procedures from Asare and Wright (2004), who include a list of effective audit procedures for the fraud that the case is based on and from Hoffman and Zimbelman (2007), who use the same fraud in their study and who also discuss procedures and changes to those procedures that would effectively target the case fraud. Our list of effective procedures is based on the procedures discussed in these papers and we also

code other procedures as relevant if they could reasonably be expected to target the case fraud. I also use the percentage of relevant procedures identified (total relevant procedures identified / total procedures identified) as an alternative dependent variable for H3 to address the potential concern that auditors who identify more relevant risks may list a higher number of total (relevant and irrelevant) procedures.

4. RESULTS

Descriptive Statistics

Descriptive statistics are reported in Table 3. On average, participants identify 1.91 relevant risks and 2.07 irrelevant risks. Given that performing fraud-related audit tasks is difficult, it is not surprising that on average auditors recognize a small number of fraud risks. The total number of risks identified (3.98) by these participants is consistent with Carpenter (2007), who finds that less experienced auditors (staff and seniors) identify an average of about 4.63 total fraud brainstorming ideas on their own. The average overall fraud risk assessment is 54.41 on a scale from 0 (“Certain fraud does not exist”) to 100 (“Certain fraud does exist”). These assessments are reasonable for two reasons. First, this case is based on an actual fraud and so it is encouraging that participants did not rate the overall risk of fraud lower, even though fraud is rare. Second, the average overall fraud risk assessment made by my participants is similar to the average fraud risk assessment (across conditions) reported in Asare and Wright (2004). Their participants had an average assessment of 5.09 out of 10 (1 = low risk; 10 = high risk) in a case where fraud was also present. Finally, my participants identify an average of 3.68 relevant procedures and 3.41 irrelevant procedures.

[Insert Table 3 Here]

Hypothesis 1

In order for Hypothesis 1 to be supported, auditors who are prompted to use an intentional strategy have to identify significantly more relevant fraud risks than auditors who are not prompted to use this strategy. Panel A of Table 4 shows that participants who are prompted to use an intentional strategy identify an average of 2.26 relevant risks while those who are not prompted to use an intentional strategy identify an average of 1.61 relevant risks. The results of an ANOVA with the intentional strategy prompt (yes or no) and the requirement to form and document independent expectations (yes or no) as between-participant factors are shown in Panel B of Table 4.¹³ These results reveal that the difference in the number of relevant risks identified between participants who use an intentional strategy and those who do not is significant ($p = 0.01$), which supports H1. These results are consistent with auditors developing better insights about how the client could be committing fraud when they first link relevant client information (red flags and analytical procedures) to client management's goals.

[Insert Table 4 Here]

Another explanation for this result is that prompting auditors to use an intentional strategy could simply increase their concerns about fraud and lead them to identify more total (relevant or irrelevant) fraud risks. I therefore test H1 by considering the total number of risks participants identify. In untabulated results, participants who are prompted to use an intentional strategy do not identify a higher number of total fraud risks than participants who are not prompted to use this strategy (4.05 vs. 3.91, $p = 0.43$). Taken together, these results provide evidence that prompting auditors to use an intentional strategy helps them identify relevant fraud risks rather than simply increasing the total number of risks they identify.

Hypothesis 2

Hypothesis 2 predicts that auditors will benefit more from using an intentional strategy when they first form and document independent expectations for a client's reported results. In order for H2 to be supported, auditors who are both prompted to use an intentional strategy and are asked to form and document independent expectations must identify a significantly higher number of relevant risks than auditors who are prompted to use an intentional strategy but do not form and document expectations (see Figure 2). Hypothesis 2 is not supported. Auditors who are prompted to use an intentional strategy and who form and document expectations do not identify more relevant risks (mean = 2.00) than auditors who are prompted to use an intentional strategy but do not form and document expectations (mean = 2.63) (See Table 4, Panel A).

Hypothesis 3

Hypothesis 3 predicts that auditors who identify a higher number of relevant risks will identify a higher number of effective audit procedures. Hypothesis 3 will be supported if the coefficient on the number of relevant risks participants identify is positive and significant after controlling for other factors that could influence the number of relevant procedures auditors identify (see equation 1). Because auditors can assess overall fraud risk high without understanding how fraud is most likely occurring (and because prior research does not find an association between overall risk assessments and effective procedures), I do not expect the coefficient on overall fraud risk to be significant.

I also control for several variables that may affect the likelihood that participants identify relevant procedures, such as audit experience, whether the auditors deal with revenue recognition on a regular basis, whether they work in an industry that is related to the case and the amount of

¹³ I include an indicator variable for whether participants complete the case in a training session (1 = yes, 0 = no) as a control variable in each ANOVA to control for any effect this difference in setting may have. Excluding this

time they spend on the case. I also control for whether the auditors come from a Big 4 firm and whether the participants complete the case during training in order to control for any differences due to audit firm size and differences due to the setting in which participants complete the case.¹⁴

[Insert Table 5 Here]

The results of equation 1 are found in Table 6. As predicted, the coefficient on relevant risks is positive and significant ($p = 0.00$) and, consistent with prior research, the coefficient on overall fraud risk is not significant ($p = 0.17$). In untabulated results, I also re-estimate equation 1 using the percentage of relevant procedures auditors identify (total relevant procedures identified / total procedures identified) as the dependent variable and again find that the coefficient on relevant risks is positive and significant ($p = 0.00$) but the coefficient on overall fraud risk is not significant ($p = 0.13$). Taken together, these results are consistent with the expectation that auditors who develop a better understanding of the ways that management could be committing fraud are in a better position to identify procedures that will target fraud, consistent with SAS No. 99 implementation guidance (AICPA 2003).

I also examine whether auditors identify more irrelevant procedures when they identify more irrelevant risks by regressing the number of irrelevant procedures participants identify on the number of irrelevant risks they identify, their overall fraud risk assessments, and the control variables used in equation 1. The coefficient on irrelevant risks is positive and significant ($p = 0.00$) and the coefficient on overall fraud risk is not significant ($p = 0.28$) (see Table 7). These results suggest that auditors who do not develop an adequate understanding of the ways

control variable does not affect the inferences drawn for these tests.

¹⁴ Table 5 reveals that there are significant correlations among the right-hand side variables in the model and so I look at the variable inflation factors (VIFs) to determine if my model could be affected by multicollinearity. VIFs above 5.00 are a reasonable cutoff for concerns about multicollinearity (Montgomery et al. 2001). I find that the VIFs for this and the other model are below 2.00 and so multicollinearity is not a concern in the model.

management is most likely committing fraud will identify more procedures that do not target fraud.

[Insert Table 6 Here]

[Insert Table 7 Here]

5. CONCLUSION

This study investigates whether prompting auditors to link relevant, available information (analytic results and fraud red flags) to client management's goals helps auditors identify more relevant fraud risks. The process of linking relevant information to management goals during audit planning is based on the principles of an "intentional strategy" (Dennett 1987; Johnson et al. 1993). I also investigate whether instructing auditors to formulate and document independent expectations for analytics that are based on a client's reported results enhances the benefits of using an intentional strategy. Accurately identifying fraud risks is essential to detecting fraud because auditors will select audit procedures based on the risks they identify (AICPA 2002). Hence, this study also considers whether auditors who identify a higher number of relevant fraud risks identify a higher number of procedures that target fraud.

I find that auditors identify a higher number of relevant fraud risks when they are prompted to use an intentional strategy, but that auditors do not identify a significantly higher total number of risks when they are prompted to use this strategy. These results are consistent with auditors more effectively identifying and focusing on relevant fraud risks when they link relevant information to client management's goals. While my evidence suggests auditors can benefit from using an intentional strategy when they identify fraud risks, I do not find that the

benefits of this approach are greater when auditors are also required to form and document independent expectations for a client's reported results.

Next, I find that auditors who identify a higher number of relevant (irrelevant) risks identify a higher number of audit procedures that target (do not target) an actual fraud. Furthermore, when auditors identify a higher number of relevant fraud risks, they subsequently identify a higher percentage (total relevant procedures identified / total procedures identified) of procedures that target fraud. These results are consistent with SAS No. 99 and related guidance that auditors should select audit procedures to address the fraud risks they identify by determining how and where fraud is most likely occurring before selecting procedures (AICPA 2002, 2003). They also suggest that audit researchers and audit firms should seek to facilitate auditors' identification of specific, relevant fraud risks rather than only focusing on improving auditors' overall fraud risk assessments.

This study contributes to the audit literature in several ways. First, consistent with SAS No. 99's focus on the importance of identifying fraud risks, I extend the fraud literature by finding that auditors who link SAS No. 99 relevant information to management's goal identify more relevant fraud risks during audit planning, on average, than auditors who do not use this approach. Second, I extend the intentional strategy literature. Johnson et al. (e.g., 1992, 1993) primarily examine the intentional strategy using computer models and considering whether partners use an intentional strategy-type approach when they perform a concurring partner review task. The current study is the first to systematically manipulate whether auditors are prompted to use an intentional strategy and further finds that the intentional strategy can improve the judgments of relatively inexperienced auditors when they perform an audit planning task.

Third, prior experimental research has shown that auditors extend audit testing when they assess overall fraud risk higher but that auditors do not alter the nature of audit procedures or identify more effective procedures when they assess overall fraud risk higher (e.g., Zimbelman 1997; Asare and Wright 2004). However, SAS No. 99 guidance (AICPA 2003) suggests auditors should try to discern how and where fraud is occurring before selecting procedures. Consistent with this view, I extend the literature on audit procedures by finding that auditors who document more relevant (irrelevant) ways that the client is committing fraud subsequently identify a higher number of procedures that target (do not target) fraud.

This study has several limitations. I only give auditors limited materials and tell them to complete the case individually. In practice, auditors can consult with firm materials or other auditors. Also, the auditors, on average, completed the case in less than an hour. Even though auditors are accustomed to time constraints, they would likely take a longer time to make the judgments they are asked to make in this case. Nevertheless, I expect that an intentional strategy should continue to help auditors who have more information because it continues to provide a way to effectively combine the information. Similarly, auditors who take more time to link the information to management's goals may be able to perform an intentional strategy process more effectively and thus achieve greater benefits from using this strategy. Finally, I only consider the impact of an intentional strategy and documenting expectations in a setting where fraud has occurred. This study does not develop or test insights regarding the impact of these factors in non-fraud settings.

It is also important to note how this study can aid practitioners. First, given that using an intentional strategy approach to identify fraud risks, practitioners may want to find ways to help their audit teams focus on management's goals. Importantly, this approach is not costly to

implement. The primary incremental cost of this strategy is that it requires auditors to spend time and effort determining management's primary goals and then to link the information they already gather under SAS No. 99 to these goals. Second, my results suggest auditors who identify a higher number of relevant fraud risks are able to identify a higher number and percentage of audit procedures that target fraud, consistent with the ideas expressed in recent AICPA (2003) guidance. As a result, firms may benefit from increasing their training efforts that aim to help auditors identify fraud risks because these risks because the risks they identify have the potential to help determine the effectiveness of audit procedures.

REFERENCES

- Abdolmohammadi, M.J. 1999. A Comprehensive Taxonomy of Audit Task Structure, Professional Rank and Decision Aids for Behavioral Research. *Behavioral Research in Accounting* 11: 51-92.
- Abraham, C. and P. Sheeran. 2003. Implications of Goal Theories for the Theories of Reasoned Action and Planned Behaviour. *Current Psychology: Developmental, Learning, Personality, Social* 22 (3): 264-280.
- Abualsamh, R.A., B. Carlin, and R.R. McDaniel, Jr. 1990. Problem Structuring Heuristics in Strategic Decision Making. *Organizational Behavior and Human Decision Processes* 45 (2): 159-174.
- American Institute of Certified Public Accountants (AICPA). 1988. Statement on Auditing Standards No. 56: *Analytical Procedures*. New York, NY: AICPA.
- American Institute of Certified Public Accountants (AICPA). 1997. Statement on Auditing Standards No. 82: *Consideration of Fraud in a Financial Statement Audit*. New York, NY: AICPA.
- American Institute of Certified Public Accountants (AICPA). 2002. Statement on Auditing Standards No. 99: *Consideration of Fraud in a Financial Statement Audit*. New York, NY: AICPA.
- American Institute of Certified Public Accountants (AICPA). 2003. Fraud Detection in a GAAS Audit: SAS No. 99 Implementation Guide. *AICPA Practice Aid Series*. New York, NY: AICPA.
- Asare, S. K. and A. M. Wright. 2004. The Effectiveness of Alternative Risk Assessment and Program Planning Tools in a Fraud Setting. *Contemporary Accounting Research* 21 (2): 325-352.
- Bartov, E., D. Givoly, and C. Hayn. 2002. The Rewards to Meeting or Beating Earnings Expectations. *Journal of Accounting and Economics* 33 (2): 173-204.
- Bell, T.B. and A.M. Wright. 1997. When Judgment Counts. *Journal of Accountancy* 184 (5): 73-76.
- Biggs, S.F., W.R. Knechel, N.R. Walker, W.A. Wallace, and J.J. Willingham. 1995. Analytical Procedures. In T.B. Bell and A. M. Wright (Eds.) *Auditing Practice, Research, and Education: A Productive Collaboration* (pp. 143). New York, NY: American Institute of Certified Public Accountants.

- Brown, C.E. and I. Solomon. 1991. Configural Information Processing in Auditing: The Role of Domain-Specific Knowledge. *The Accounting Review* 66 (1): 100-119.
- Carpenter, T.D. 2007. Audit Team Brainstorming, Fraud Risk Identification, and Fraud Risk Assessment: Implications of SAS No. 99. *The Accounting Review* 82 (5): 1119-1140.
- Dennett, D.C. 1987. *The Intentional Stance*. Cambridge, MA: The MIT Press.
- Erickson, M, B.W. Mayhew, and W.L. Felix, Jr. 2000. Why Do Audits Fail? Evidence from Lincoln Savings and Loan. *Journal of Accounting Research* 88 (1): 165-194.
- Glover, S. M., D. F. Prawitt, J. J. Schultz, Jr., and M. F. Zimbelman. 2003. A Test of Changes in Auditors' Fraud-Related Planning Judgments since the Issuance of SAS No. 82. *Auditing: A Journal of Practice and Theory* 22 (2): 237-251.
- Grazioli, S. 2004. Where Did They Go Wrong? An Analysis of the Failure of Knowledgeable Internet Consumers to Detect Deception over the Internet. *Group Decision and Negotiation* 13 (2): 149-172.
- Grazioli, S., K. Jamal, and P.E. Johnson. 2006. A Cognitive Approach to Fraud Detection. *Working Paper*, the University of Virginia, Charlottesville, VA.
- Hackenbrack, K. 1993. The Effect of Experience with Different Sized Clients on Auditor Evaluations of Fraudulent Financial Reporting Indicators. *Auditing: A Journal of Practice and Theory* 12 (1): 99-110.
- Hammersley, J.S. 2006. Pattern Identification and Industry-Specialist Auditors. *The Accounting Review* 81 (2): 309-336.
- Hirst, D. Eric and L. Koonce. 1996. Audit Analytical Procedures: A Field Investigation. *Contemporary Accounting Research* 13 (2): 457-486.
- Hoffman, V.B. and M.F. Zimbelman. 2007. The Effects of Strategic Reasoning and Brainstorming on the Nature of Audit Plans in Response to Fraud Risk. *Working Paper*, University of Pittsburgh, Pittsburgh, PA.
- Jiambalvo, J. and W. Waller. 1984. Decomposition and Assessments of Audit Risk. *Auditing: A Journal of Practice and Theory* 3 (2): 80-88.
- Johnson, P.E., S. Grazioli, K. Jamal, and I.A. Zualkernan. 1992. Success and Failure in Expert Reasoning. *Organizational Behavior and Human Decision Processes* 53 (2): 173-203.
- Johnson, P.E., S. Grazioli, and K. Jamal. 1993. Fraud Detection: Intentionality and Deception in Cognition. *Accounting, Organizations and Society* 18 (5): 467-488.

- Johnson, P.E., S. Grazioli, K. Jamal, and R.G. Berryman. 2001. Detection Deception: Adversarial Problem Solving in a Low Base-Rate World. *Cognitive Science* 25 (3): 355-392.
- Kasznik, R. and M. F. McNichols. 2002. Does Meeting Earnings Expectations Matter? Evidence from Analyst Forecast Revisions and Share Prices. *Journal of Accounting Research* 40 (3): 727-759.
- Kinney, Jr., W.R. and W.C. Uecker. 1982. Mitigating the Consequences of Anchoring in Auditor Judgments. *The Accounting Review* 57 (1): 55-69.
- Knapp, C.A. and M.C. Knapp. 2001. The Effects of Experience and Explicit Fraud Risk Assessment in Detecting Fraud with Analytical Procedures. *Accounting, Organizations, and Society* 26 (1): 25-37.
- Koonce, L. 1993. A Cognitive Characterization of Audit Analytical Review. *Auditing: A Journal of Practice and Theory* 12 (Supplement): 57-76.
- Loebbecke, J. K., M. M. Eining, and J. J. Willingham. 1989. Auditors' Experience with Material Irregularities: Frequency, Nature, and Detectability. *Auditing: A Journal of Practice and Theory* 9 (1): 1-28.
- Mawby, R. and R.W. Mitchell. 1986. Feints and Ruses: An Analysis of Deception in Sports. In R.W. Mitchell and N.S. Thompson (Eds.) *Deception: Perspectives on Human and Nonhuman Deceit* (pp. 313-322). Albany, NY: State University of New York Press.
- McDaniel, L.S. and W.R. Kinney, Jr. 1995. Expectation-Formation Guidance in the Auditor's Review of Interim Financial Information. *Journal of Accounting Research* 33 (1): 59-76.
- Moeckel, C. 1990. The Effect of Experience on Auditors' Memory Errors. *Journal of Accounting Research* 28 (2): 368-387.
- Moeckel, C. 1991. Two Factors Affecting an Auditor's Ability to Integrate Audit Evidence. *Contemporary Accounting Research* 8 (1): 270-292.
- Montgomery, D.C., E.A. Peck, and G.G. Vining. 2001. *Introduction to Linear Regression Analysis*. New York, NY: John Wiley & Sons, Inc.
- Nieschwietz, R.J., J.J. Schultz, Jr., and M.F. Zimbelman. 2000. Empirical Research on External Auditors' Detection of Financial Statement Fraud. *Journal of Accounting Literature* 19 (2000): 190-246.
- Nusbaum, E.E. 2007. Top 10 Wish List for Audit Research. *Current Issues in Auditing* 1: C3-C9.

- Palmrose, Z.-V. 1987. Litigation and Independent Auditors: The Role of Business Failures and Management Fraud. *Auditing: A Journal of Practice and Theory* 6 (2): 90-103.
- Public Company Accounting Oversight Board (PCAOB). 2006. Report on 2006 Inspection of PricewaterhouseCoopers LLP. *PCAOB Release No. 104-2006-205*: December 14, 2006. Available for viewing as of August 9, 2007 at: http://pcaob.org/Inspections/Public_Reports/2006/PricewaterhouseCoopers.pdf.
- Public Company Accounting Oversight Board (PCAOB). 2007a. Observations on Auditors' Implementation of PCAOB Standards relating to auditors' Responsibilities with respect to Fraud. *PCAOB Release No. 2007-001*: January 22, 2007. Available for viewing as of February 2, 2007 at: http://www.pcaobus.org/Inspections/Other/2007/01-22_Release_2007-001.pdf
- Public Company Accounting Oversight Board (PCAOB). 2007b. Report on 2006 Inspection of Grant Thornton LLP. *PCAOB Release No. 104-2007-088*: June 28, 2007. Available for viewing as of August 9, 2007 at: http://pcaob.org/Inspections/Public_Reports/2007/Grant_Thornton.pdf.
- Reilly, D. 2007. Accounting's Crisis Killer. *The Wall Street Journal* 249 (C1-C2).
- Securities and Exchange Commission (SEC). 1997. *Accounting and Auditing Enforcement Release No. 987: In the matter of Bausch and Lomb Incorporated. Harold O. Johnson, Ermin Ianacone, and Kurt Matsumoto, respondents*. Chicago: CCH.
- Shelton, S.W., O.R. Whittington, and D. Landsittel. Auditing Firms' Fraud Risk Assessment Practices. *Accounting Horizons* 15 (1): 19-33.
- Tversky, A. and D. Kahneman. 1974. Judgment Under Uncertainty: Heuristics and Biases. *Science* 185 (4157): 1124-1131.
- Wilks, T. J. and M. F. Zimbelman. 2004a. Using Game Theory and Strategic Reasoning Concepts to Prevent and Detect Fraud. *Accounting Horizons* 18 (3): 173-184.
- Wilks, T. J. and M. F. Zimbelman. 2004b. Decomposition of Fraud-Risk Assessments and Auditors' Sensitivity to Fraud Cues. *Contemporary Accounting Research* 21 (3): 719-745.
- Zimbelman, M.F. 1997. The Effects of SAS No. 82 on Auditors' Attention to Fraud Risk Factors and Audit Planning Decisions. *Journal of Accounting Research* 35 (Supplement): 75-97.
- Zimbelman, M. F. and W. S. Waller. 1999. An experimental investigation of auditor-auditee interaction under ambiguity. *Journal of Accounting Research* 37 (Supplement): 135-155.

Figure 1: Auditors' Consideration of Financial Statement Fraud

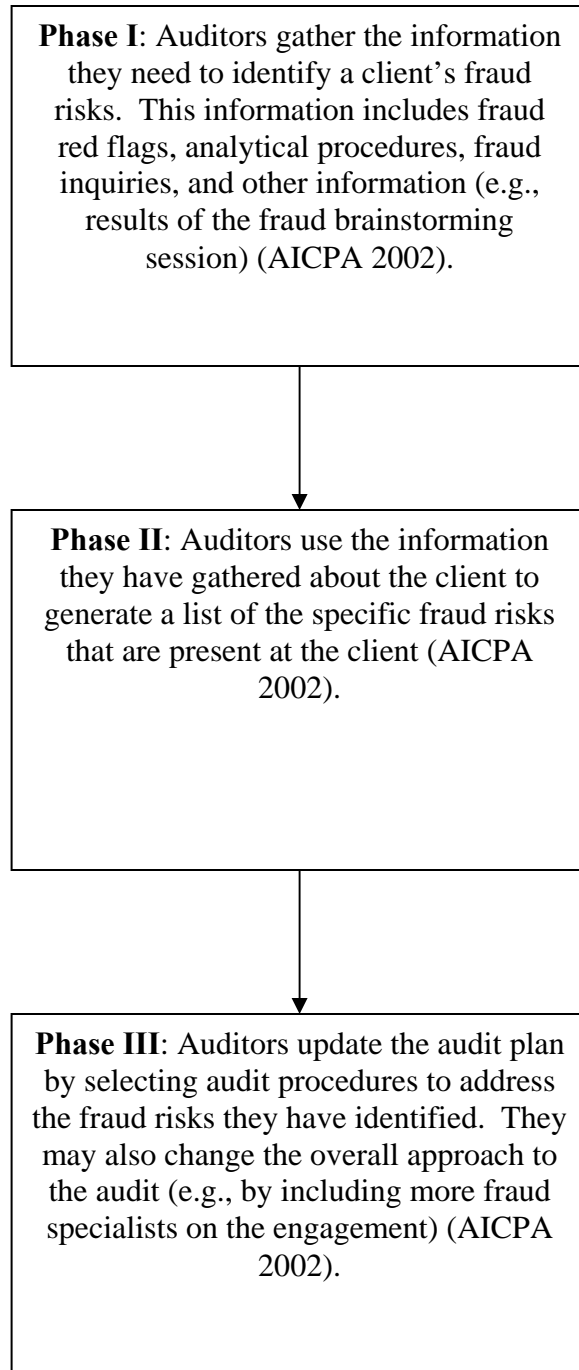


Figure 2: Predicted Interaction for H2

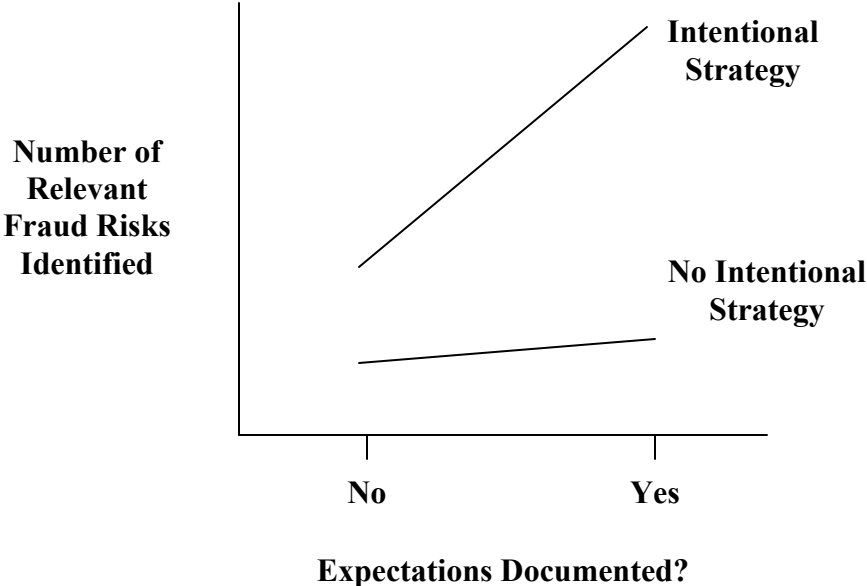


Figure 3: Overview of Experimental Task

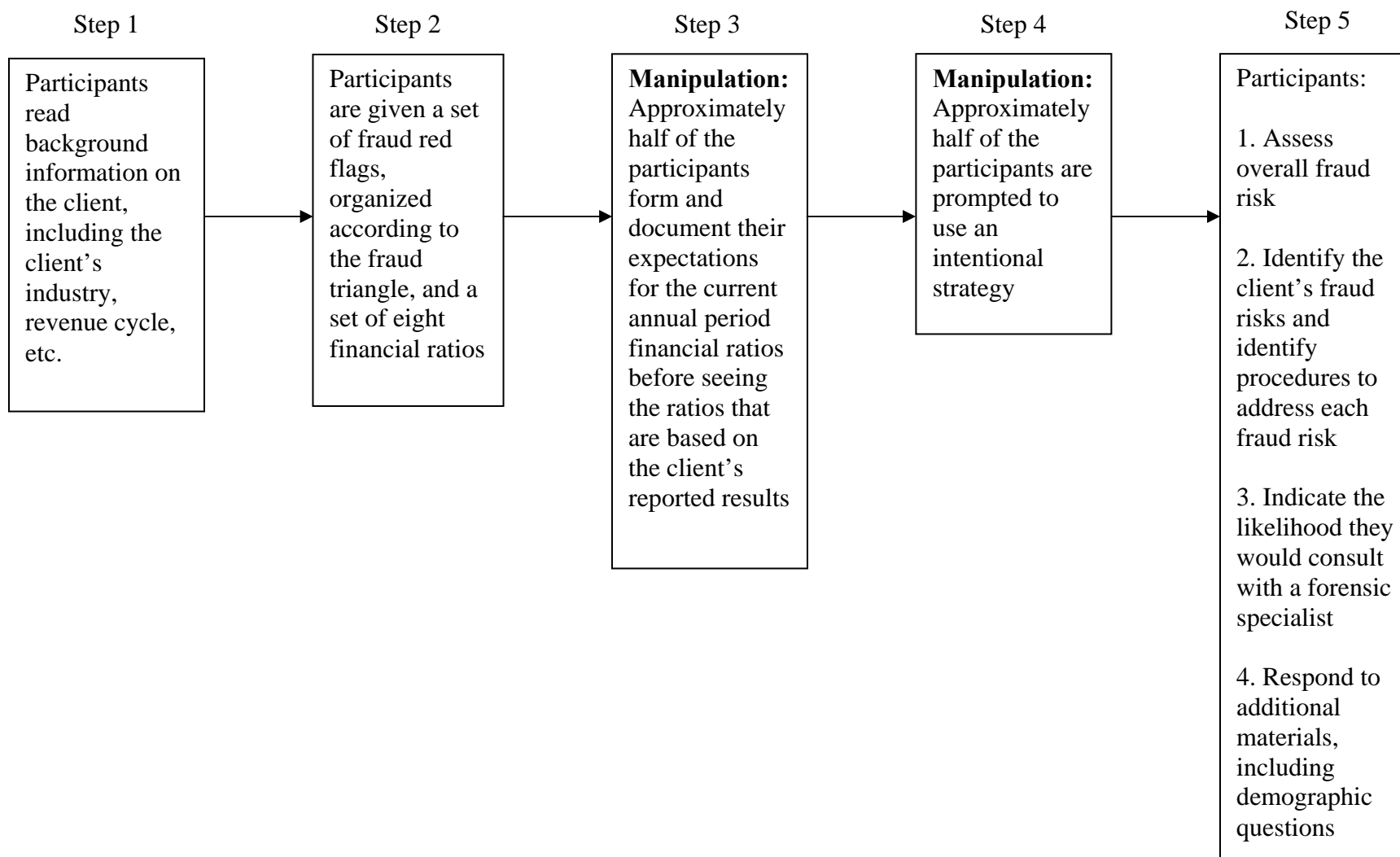


Table 1: Definitions and Examples of Fraud Red Flags, Overall Fraud Risk Assessments, and Fraud Risks

Category	Definition	Examples
Red Flags	<p>“[E]vents or conditions that indicate incentives/pressures to perpetrate fraud, opportunities to carry out the fraud, or attitudes/rationalizations to justify a fraudulent action. Such events or conditions... do not necessarily indicate the existence of fraud; however, they often are present in circumstances where fraud exists” (AICPA 2002, 31).</p>	<p>a. “Operating losses making the threat of bankruptcy, foreclosure, or hostile takeover imminent.” b. “Personal guarantees of debts of the entity.” c. “Ineffective board of directors or audit committee oversight over the financial reporting process and internal control.” d. “Frequent disputes with the current or predecessor auditor on accounting, auditing, or reporting matters.” (AICPA 2002, 85)</p>
Overall Fraud Risk Assessment	<p>“[T]he risk of material misstatement of the financial statements due to fraud...” (AICPA 1997, 12).</p>	<p>a. On a scale from 0 (No fraud risk) to 100 (High fraud risk), what is the likelihood that fraud is occurring at this company? b. Overall fraud risk at this client is (circle one): Low Medium High</p>
Fraud Risks	<p>“[H]ow and where the entity's financial statements might be susceptible to material misstatement due to fraud...” (AICPA 2002, 02).</p>	<p>An auditor determines that there is a reasonable likelihood that management could be taking the following intentional actions to commit fraud: a. Management does not recognize enough bad debt expense in the period. b. Management is recognizing sales in the current period that are not shipped until the next period. c. Management is creating fictitious sales invoices to increase revenues. d. Management is counting goods on consignment as legitimate sales.</p>

Table 2: Participant Demographics

Variable	Mean	Min	Max	S.D.
Experience	31.789	2.000	106.000	18.024
CPA	0.560	0.000	1.000	0.499
Fraud Experience	0.094	0.000	1.000	0.294
Material Error Experience	3.200	0.000	25.000	4.820

Where:

Experience is an auditor's number of months of auditing experience

CPA is an indicator variable for whether an auditor is a CPA or not (1 = yes, 0 = no)

Fraud Experience is the number of material frauds that an auditor has encountered in the last three years

Material Error Experience is the number of material errors that an auditor has encountered in the last three years

Table 3: Descriptive Statistics

	Mean	Std. Deviation	Min	Max
Relevant Risks	1.91	1.43	0	6
Irrelevant Risks	2.07	1.32	0	6
Relevant Procedures	3.68	2.24	0	10
Irrelevant Procedures	3.41	2.22	0	12
Percent Relevant Procedures	0.51	0.24	0	1
Overall Fraud Risk	54.41	17.74	15	95
Consult	63.63	25.52	1	100

Where:

Relevant Risks are risks that participants came up with and listed that relate to the actual case fraud

Irrelevant risks are risks that participants came up with and listed that did not relate to the actual case fraud

Relevant Procedures are audit procedures that participants came up with and listed that target the actual case fraud

Irrelevant procedures are audit procedures that participants came up with and listed that do not target the actual case fraud

Percent relevant procedures is computed as (total relevant procedures identified ÷ total procedures identified)

Overall fraud risk is participants' overall fraud risk assessment on a scale from 0 (Certain fraud does not exist) to 100 (Certain fraud does exist).

Consult: the likelihood that auditors will consult with a forensic specialist on a scale from 0 (Certainly will not consult) to 100 (Certainly will consult)

Table 4: Number of Relevant Risks Identified

Panel A: Mean (Standard Deviation) Number of Relevant Risks Identified

		Documented Expectations		Average
		Yes	No	
Used an Intentional Strategy	Yes	2.00 (1.48) n = 23	2.63 (1.50) n = 16	2.26 (1.50) n = 39
	No	1.63 (1.24) n = 24	1.59 (1.40) n = 22	1.61 (1.31) n = 46
Average		1.81 (1.36) n = 47	2.03 (1.52) n = 38	

Panel B: Between-Participant ANOVA of Intentional Strategy and Form/Document Expectations on Number of Relevant Fraud Risks Identified

Source	DF	Mean Square	F	p-value
Training	1	12.63	6.92	0.010
Intentional Strategy	1	12.01	6.58	0.012
Document Expectations	1	3.32	1.82	0.182
Intentional Strategy * Document Expectations	1	2.44	1.34	0.251
Error	80	1.83		

Where:

Relevant Risks are risks that participants came up with and listed that relate to the actual case fraud

Training is a binary control variable indicating whether the participants completed the instrument during training (1 = yes, 0 = no).

Table 5: Correlations Between Dependent, Independent, and Control Variables for Regression Analyses[^]

	Rel Risks	Irrel Risks	Overall FrRisk	Rel Procs	Irrel Procs	Percent Rel Procs	Exper	Rev Rec Exper	Indus	Big4	Train	Time
RelRisks		-.298**	0.095	.533**	0.008	.318**	-0.017	0.073	0.196	0.064	-.231*	.342**
Irrel Risks	-.288**		0.096	-0.023	.612**	-.390**	-0.088	0.008	-0.105	-0.129	-0.134	0.085
Overall FrRisk	0.062	0.101		0.000	0.06	-0.078	0.168	0.159	0.045	0.204	0.158	0.082
RelProcs	.542**	-0.077	-0.009		-0.025	.680**	.225*	.417**	0.204	-0.138	-0.084	0.196
IrrelProcs	0.016	.638**	0.084	-0.062		-.644**	-0.211	-0.042	0.013	-0.054	-0.149	0.099
PercentRelProcs	.332**	-.408**	-0.068	.682**	-.564**		.270*	.295**	0.117	-0.061	0.046	0.047
Exper	0.077	-0.12	0.205	.339**	-0.176	.288**		.409**	-0.088	-0.165	0.198	-0.185
RevRecExper	0.04	-0.041	0.164	.415**	-0.113	.265*	.463**		0.145	-0.182	0.1	-0.099
Indus	0.178	-0.072	0.05	0.209	-0.003	0.116	-0.087	0.134		0.143	0.06	-0.078
Big4	0.035	-0.055	0.204	-0.149	-0.036	-0.073	-0.129	-0.2	0.143		.360**	-0.08
Train	-.239*	-0.079	0.166	-0.096	-0.134	0.049	0.149	0.11	0.06	.360**		-.457**
Time	0.199	0.137	-0.028	0.081	0.134	-0.026	-0.126	-.245*	0.077	0.016	-.359**	

[^]Spearman (Pearson) Correlations above (below) diagonal;

**p < 0.01

*p < 0.05

Where: *RelRisks* is the number of risks that participants came up with and listed that relate to the actual case fraud. *IrrelRisks* is the number of risks that participants came up with and listed that did not relate to the actual case fraud. *OverallFrRisk* is an auditor's overall fraud risk assessment on a scale from 0 (Certain fraud does not exist) to 100 (Certain fraud does exist). *RelProcs* is the number of procedures that participants came up with and listed that target the actual case fraud. *IrrelProcs* is the number of procedures that participants came up with and listed that do not target the actual case fraud.

PercentRelProcs: the percentage of procedures an auditor identifies that target fraud (total relevant procedures identified / total procedures identified). *Experience* is an auditor's number of months of auditing experience. *RevRecExperience* is an auditor's revenue recognition experience on a scale from 0 (No prior experience) to 10 (Deal with this issue often). *Industry* is an indicator variable for whether an auditor primarily works in an industry related to the case study (e.g., consumer or industrial products, manufacturing, etc.) (1 = yes, 0 = no). *Big4* is an indicator variable for whether an auditor is from a Big 4 firm (1 = yes, 0 = no). *Training* is an indicator variable for whether an auditor completes the case in a training session (1 = yes, 0 = no). *Time* is the number of minutes an auditor spends completing the case.

Table 6: Determinants of the Number of Relevant Procedures Identified

$$RelProcs = \alpha + \beta_1 RelRisks + \beta_2 OverallFrRisk + \beta_3 Experience + \beta_4 RevRecExperience + \beta_5 Industry + \beta_6 Big4 + \beta_7 Training + \beta_8 Time + \varepsilon$$

Variable	Expected Sign	Coefficient	(p-value)
Intercept	?	0.572	0.545
RelRisks (H3)	+	0.803	0.000
OverallFrRisk	n.s.	-0.016	0.166
Experience	+	0.023	0.053
RevRecExperience	+	0.286	0.002
Industry	+	0.504	0.227
Big4	?	-0.581	0.310
Training	?	0.301	0.510
Time	+	0.010	0.291

R-squared: 0.535 Adjusted R-squared: 0.482

Where:

RelProcs: the number of procedures auditors identify that target fraud

RelRisks: the number of risks auditors identify that relate to the actual case fraud

OverallFrRisk: auditors' overall fraud risk assessment on a scale from 0 (Certain fraud does not exist) to 100 (Certain fraud does exist)

Experience: auditors' number of months of auditing experience

RevRecExperience: auditors' revenue recognition experience on a scale from 0 (No prior experience) to 10 (Deal with this issue often)

Industry: indicator variable indicating whether the auditor primarily works in an industry related to the case study (e.g., consumer or industrial products, manufacturing, etc.) (1 = yes, 0 = no)

Big4: indicator variable indicating whether the auditor is from a Big 4 firm (1 = yes, 0 = no)

Training: indicator variable indicating whether auditor completed the case in a training session (1 = yes, 0 = no)

Table 7: Determinants of the Number of Irrelevant Procedures Identified

$$IrrelProcs = \alpha + \beta_1 IrrelRisks + \beta_2 OverallFrRisk + \beta_3 Experience + \beta_4 RevRecExperience + \beta_5 Industry + \beta_6 Big4 + \beta_7 Training + \beta_8 Time + \varepsilon$$

Variable	Expected Sign	Coefficient	(p-value)
Intercept	?	1.221	0.270
IrrelRisks	+	1.040	0.000
OverallFrRisk	n.s.	0.014	0.278
Experience	-	-0.009	0.494
RevRecExperience	-	-0.023	0.591
Industry	-	0.053	0.725
Big4	?	-0.284	0.659
Training	?	-0.173	0.731
Time	-	0.001	0.912
R-squared: 0.408		Adjusted R-squared: 0.341	

Where:

IrrelProcs: the number of procedures auditors identify that do not target fraud.

IrrelRisks: the number of risks auditors identify that do not target fraud.

OverallFrRisk: auditors' overall fraud risk assessment on a scale from 0 (Certain fraud does not exist) to 100 (Certain fraud does exist)

Experience: auditors' number of months of auditing experience

RevRecExperience: auditors' revenue recognition experience on a scale from 0 (No prior experience) to 10 (Deal with this issue often)

Industry: indicator variable indicating whether the auditor primarily works in an industry related to the case study (e.g., consumer or industrial products, manufacturing, etc.) (1 = yes, 0 = no)

Big4: indicator variable indicating whether the auditor is from a Big 4 firm (1 = yes, 0 = no)

Training: indicator variable indicating whether auditor completed the case in a training session (1 = yes, 0 = no)

Time: the number of minutes auditors spent completing the case