# Seminar Paper

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**Topic**  
'The Effect of Audit versus Fraud Specialist Mindset on the Development of Problem Representation and Subsequent Fraud-Related Decision Making'

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The Effect of Audit versus Fraud Specialist Mindset on the Development of Problem Representation and Subsequent Fraud-Related Decision Making

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The Effect of Audit versus Fraud Specialist Mindset on the Development of Problem Representation and Subsequent Fraud-Related Decision Making

ABSTRACT

Fraud risk assessment has a direct impact on the effectiveness of financial statement auditors’ fraud detection during an audit. However, prior literature has shown that auditors are generally poor at assessing fraud risk. The Public Company Accounting Oversight Board (PCAOB) suggests that auditors may improve their fraud risk assessment performance by adopting a fraud specialist mindset. Currently no research has examined the effects of the fraud specialist mindset on the financial statement audit process. The purpose of this study is to determine whether it is possible to inculcate a specific mindset (audit or fraud specialist) on inexperienced auditors and to observe whether these mindsets will result in noticeably different fraud-related judgments.

Using an experiment, we manipulated both mindset and actual fraud risk to evaluate their impact on fraud-related decision making. We find it is possible to inculcate differing mindsets through training narrative and that these mindsets result in different problem representations and audit-related judgments. Specifically, those with a fraud specialist mindset make higher fraud risk assessments and are more likely to take further investigative action to examine the company’s accounts than those with the audit mindset in both high and low fraud risk conditions. Finally, we find that problem representations partially mediate the effect of mindset on fraud-related decision making performance.
The Effect of Audit versus Fraud Specialist Mindset on the Development of Problem Representation and Subsequent Fraud-Related Decision Making

I. INTRODUCTION

Fraud is costly\(^1\) and it damages the reputation and credibility of the audit profession. To address this risk, auditing standards require auditors to assess the risk of fraud in financial statements, prior to commencing the audit. Fraud risk assessment has a direct impact on the effectiveness and efficiency of an audit because it sets the tone for the audit and gives auditors a basis to adjust subsequent audit procedures. Accounting researchers have paid much attention to fraud-risk related issues, given its importance (Cushing et al., 1995; Nieschwietz et al., 2000; Allen et al., 2006). However, many of these studies have found that auditors are generally not the optimal assessors of fraud risk and, consequently, they often fall short in detecting fraud (Joyce and Biddle 1981; Hackenbrack 1992; Knapp and Knapp 2001).

Although standard setters have increased their focus on fraud risk, including extending the steps auditors are expected to take in an audit to increase the likelihood they will detect material misstatements due to fraud,\(^2\) Public Accounting Oversight Board (PCAOB) inspection teams continue to identify problems with this aspect of the audit (AICPA, 2006; Franzel, 2013). Additionally, the Association of Certified Fraud Examiners (ACFE) has documented that external audits are not an effective way to uncover fraud (ACFE, 2012; ACFE, 2010; ACFE, 2008; ACFE, 2006; ACFE, 2004; ACFE, 2002).

In 2004, the PCAOB Standing Advisory Group (SAG) discussed whether encouraging auditors to adopt the mindset of a fraud specialist would improve their fraud risk assessment and

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\(^1\) In its 2012 report to the nation, the Association of Certified Fraud Examiners (ACFE) reported an estimated $3.5 trillion was lost worldwide in 2011 due to fraud (ACFE, 2012).  
\(^2\) Auditors are currently required to participate in brainstorming sessions and to consider the possibility that a material misstatement due to fraud could be present (AICPA 2002). SAS No. 99 also requires the auditor to have a mindset that is responsive to fraud risk.
increase their likelihood in uncovering fraud (PCAOB, 2004). Although auditors are expected to have a mindset that recognizes the possibility of fraud during an audit, the PCAOB acknowledges that it is still possible for auditors to approach the audit with an inappropriate mindset (PCAOB, 2011). Recognizing that the adoption of an appropriate mindset is central to the auditors’ decision-making process (Ranzilla et al., 2011), accounting researchers have similarly advocated the adoption of a fraud specialist mindset by auditors as a means to improve their likelihood of detecting fraud (Bologna, 1984; Bologna and Lindquist, 1987; Singleton et al., 2006; Rosen, 2006a; Rosen, 2006b; Smieliauskas, 2006; Singleton and Singleton, 2007). For example, Hogan et al. (2008) suggest that the study of fraud specialist and audit mindsets would provide important insight into how differing mindsets influence auditors’ fraud-related decision-making performance. Nevertheless, no study has investigated the direct effect of mindset on fraud risk assessment performances. Additionally, if research supports the importance of a fraud mindset to the evaluation of fraud risk, the question remains as to how to acquire that mindset; that is, can auditors take on a fraud mindset or must fraud specialists be included on every audit. Our goal in this study is to experimentally examine whether accountants can be infused with a particular mindset and to then observe how differing mindsets impact fraud-related judgment and decision-making performances.

For this purpose, we designed and executed an experiment with senior-level auditing students. The experimental instrument varied the narrative to impose a particular mindset (auditor or fraud specialist), provided a case with account information that varied in fraud risk (high or low), and asked participants to assess fraud risk and willingness to take further action in investigating a questionable account. Our results indicate that individuals who possess the fraud specialist mindset assess the overall risk of financial statement fraud higher and are more likely
to take further investigative steps for the questionable account in both high and low fraud risk conditions than individuals who possess the audit mindset. After the risk assessment, we conducted a recall task and find that individuals who possess the fraud specialist mindset develop a problem representation that is qualitatively different from individuals who possess an audit mindset. Our mediation analysis provided evidence that problem representation mediates the relationship between mindset and fraud risk assessment.

Our primary contribution to practice comes from answering the call for mindset research by the PCAOB Standing Advisory Group and other accounting researchers. We determine that mindset can be altered through the reading of a specifically targeted narrative prior to performing a task. Additionally, our study contributes to the research literature by examining the impact of mindset on cognitive processes. Specifically, we examined participants’ problem representations as a mediator of mindset on fraud-risk assessment.

We demonstrate that fraud specialist mindset results in significantly higher fraud risk assessments and greater willingness to more deeply explore an account our participants were asked to consider. Our study also contributes to the literature by contrasting the effects of fraud specialist and audit mindsets on fraud risk assessment effectiveness in both high and low fraud conditions. While some limited research supports that fraud specialists assess risk as higher in instances when actual fraud risk is high, it was unknown whether fraud specialists would be able to adjust this tendency when the risk of fraud is low. The higher risk assessments and intentions to extend testing for those with a fraud specialist mindset offer evidence of the dysfunctional aspects of this mindset on audit efficiency. While assessing fraud risk as high may increase the effectiveness in detecting fraud, it may result in expending unnecessary resources and reducing audit efficiency when the risk of fraud is low. These results bring into question whether a fraud
specialist mindset is equally effective across the broad range of fraud conditions that auditors are likely to face.

This paper is organized as follows. The next section presents our literature review and hypothesis development. Section three details the research methodology used in our study. Section four presents the results of our experiment. Finally, we discuss the conclusions from our study, limitations, and areas for future research.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Fraud Risk Assessments

Fraud is difficult to detect because it is subject to concealment, it is generally ongoing, and it can remain undiscovered for months or years (Loebbecke et al., 1989; Albrecht et al., 2001; Davia, 2002; Webber et al., 2006, ACFE, 2008). To optimize their success in detecting fraud, auditors rely on the fraud risk assessment process to determine the likelihood that fraud may exist in a client’s financial statements. Their assessment is largely based upon past experience with the client and evidence gathered during the current audit engagement. The level of assessed fraud risk then provides auditors the basis to determine when and where to concentrate or extend their audit procedures (Gerson et al., 2006).

Given its importance, accounting researchers have committed much attention to improving auditors’ fraud risk assessment performance (Cushing et al., 1995; Nieschwietz et al., 2000; Patterson and Noel, 2003; Allen et al., 2006). For example, research studies have evaluated the use and effectiveness of red flag questionnaires (Albrecht and Romney, 1986; Pincus, 1989; Asare and Wright, 2004), empirically derived fraud risk models (Hansen et al., 1996; Skousen and Wright, 2008; Tseng and Chang, 2006), and alternative methods to improve auditors’ fraud risk assessment performance (Jiambalvo and Waller, 1984; Wilks and
Zimbelman, 2004; Hammersley et al., 2010). However, fraud risk assessment has remained a significant challenge for the audit profession as research has found that auditors are generally not the optimal assessors of fraud risk (Joyce and Biddle, 1981; Hackenbrack, 1992; Nieschwietz et al., 2000; Knapp and Knapp, 2001). For example, Joyce and Biddle (1981) and Hackenbrack (1992) found auditors are susceptible to bias when making fraud risk assessments because they are prone to focus on irrelevant anchors when assessing fraud risk. Additionally, auditors are vulnerable to the influence of non-diagnostic audit evidence.\(^3\)

**Fraud Specialists versus Auditors**

Given the results of prior literature as well as regulator concern regarding auditors’ fraud risk assessments, it is evident that further research is needed to determine how best approach fraud risk assessment. The goal of our research is to gain a better understanding of the cognitive processes, and subsequent performance, of auditors and fraud specialists.

Audits are designed around the audit risk model, applied at the account level, which gives a relatively big-picture approach to the financial statement audit. This model uses assessments of inherent and control risk, as well as fraud risk, in the determination of the evidence to be collected for each account and the materiality level used to evaluate identified errors. Generally speaking, low risks can result in the collection of less audit evidence (that is, the nature, timing and/or extent of evidence may be reduced for more efficient audit testing), while more extensive and expensive audit evidence is likely to be required for more effective testing in high-risk environments (AICPA, 2006). In contrast, the work of fraud specialists is not guided by the need to balance effectiveness and efficiency through the analysis of risks; instead, they are engaged to seek out the presence of fraud within a particular segment of a company. They tend to think in

\(^3\) Non-diagnostic information represents facts that have no value in helping individuals to predict the outcome of a decision task. Alternatively, diagnostic information represents facts that are useful in aiding individuals in predicting the outcome of a decision task.
terms of the covert or the behavioral aspect of accounting transactions and controls more so than auditors (Bologna and Lindquist, 1987).4

These differing perceptions and approaches to the same context are called “mindsets” and each mindset represents a unique perspective of how auditors and fraud specialists consider recorded accounting transactions. Auditors tend to take a macro approach to navigate through an enormous amount of detail to provide an overall opinion of the financial statements, while fraud specialists take a more micro approach to focus on a small portion of the financial records. Reliance on materiality to discern significant problems facilitates auditors’ ability to disregard some errors in the financial records. The narrower scope of fraud specialists’ responsibilities affords them the opportunity to devote more resources in evaluating minor discrepancies and immaterial misstatements. Subsequently, they are more likely to investigate such discrepancies further to determine whether the discrepancies indicate a larger hidden problem.

Although studies have demonstrated differences in fraud red flag identification, knowledge structure and risk assessment between auditors and fraud specialists, there is no evidence to suggest that the two groups differ in the extent or quality of their education, training, experience, or professionalism. Instead, the primary difference that separates auditors and fraud specialists is their task objective.5 A simple analogy can be drawn as we liken auditors to patrolmen and fraud specialists to detectives (Gerson et al., 2006). Patrolmen rely on risk assessment to determine which location they should patrol more frequently than others to

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4 For example, fraud specialists believe that fraud is possible even in the presence of strong internal control as anyone is susceptible to committing fraud given the means, motive, and the opportunity (Rezaee, 2002; Singleton et al., 2006). They also tend to look below the surface of events, with the perspective that while a visible immaterial misstatement may appear to be inconsequential, the invisible portion of the misstatement could be substantial (Singleton et al., 2006). Additionally, they tend to be preoccupied with considering how a company’s internal controls may be breached or compromised by unscrupulous fraud perpetrators (Bologna and Lindquist, 1987).

5 Auditors are primarily concerned with providing reasonable assurance that the reported company’s financial statements are free from material misstatements, as a whole. In contrast, fraud specialists focus on making an absolute determination about the existence of and the possible sources of fraud in a particular account (Davia, 2000; Silverstone and Davia, 2005; Singleton et al., 2006; Singleton and Singleton, 2007).
provide a reasonable level of peace in the community. Detectives, on the other hand, are not on patrol. They are called in to investigate an alleged crime scene to determine whether a crime has been committed. They are expected to search for clues and to think about how they may piece together events that have occurred.

Boritz et al. (2013) evaluated fraud risk assessment differences between fraud specialists and auditors. The authors asked 31 fraud specialists and 17 auditors to assess a company’s fraud risk related to its revenue account, and found that fraud specialists identified significantly more fraud risk factors and assessed fraud risk at higher levels than auditors. Additionally, using graphical representation of 15 fraud cues, Rose et al. (2012) found preliminary evidence that fraud specialists organized red flags in memory differently than auditors. Most relevant to our study, the authors found that auditors who adapted the fraud specialists’ pattern of knowledge organization improved their fraud risk assessment accuracy. Thus, both Bortiz et al. (2008) and Rose et al. (2012) have provided preliminary evidence that fraud specialists are more sensitive than auditors in discerning fraud when it is present, although neither study considered these activities when fraud was absent.

The Theory of Mindset and Problem Representation

We propose the theory of mindset as a basis for predicting fraud risk assessment performance through its influence on problem representation construction. Mindset is a general cognitive orientation with distinct features that guide individuals in the collection and interpretation of information (Gollwitzer, 1996). It influences how individuals process information and shapes their thought productions and ways of thinking. Mindset impacts decision making performance through its effect on the way in which individuals process task-related information (Beckmann and Gollwitzer, 1987). Priming individuals with a particular way
of thinking can cognitively evoke in them a focus on information consistent with that mindset and subsequently lead them to search for pertinent information (Gollwitzer, 1990). Psychology researchers have found that a simple difference in mindset can yield substantial differences in how individuals perceive and perform a decision making task (Gollwitzer and Kinney, 1989; Gollwitzer, 1990; Brandstatter and Frank, 2002; Armor and Taylor, 2003; Gagné et al., 2003). For example, Armor and Taylor (2003) manipulated participants into different mindset groups by varying the manner in which they were to consider a particular performance task. Consistent with the theoretical prediction, the authors found that differing mindsets led to different performance outcomes.

Individuals are likely to behave in ways that conform to their assigned mindset. For example, Torelli and Kaikati (2009) induced participants with two distinct mindsets via a thought exercise to assess the effect on individual judgment and performance. They found that participants’ responses to a broad range of behavioral measures differed significantly depending on their assigned mindset. Consistent with prior research, Torelli and Kaikati (2009) provided further empirical evidence demonstrating the association between individual mindset and subsequent behavior.

Of particular interest to our study, mindset influences individual decision making performance via the development of problem representation (Allport, 1940; Gollwitzer, 1996; Bargh and Chartrand, 2000; Galinsky and Moskowitz, 2000; Gupta and Govindarajan, 2002; Kleinman and Palmon, 2009). Problem representation is an internal cognitive framework that embodies an individual’s understanding and interpretation about a specific decision making task.

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6 Student subjects were used in these mindset-related studies, thus allowing researchers to control for potential differences due to knowledge, experience, and training.

7 These behavioral measures include power, universalism, self-direction, benevolence, individualism, and collectivism (Torelli and Kaikati, 2009). Discussion of these measures is beyond the scope of this paper.
(Greeno, 1977; Chi et al., 1981; Bedard and Chi, 1993; Christ, 1993). When individuals approach a task, they seek information from the task context and from memory recall to construct a cognitive understanding of the context. This cognitive understanding is called a “problem representation” and can be thought of as composed of mental slots used to store the observed and recalled information relevant to their task (Pichert and Anderson, 1977; Gagné and White, 1978; Wyer and Srull, 1980; Mani and Johnson-Laird, 1982; Pitz and Sachs, 1984).

The underlying function of a problem representation is to support individual understanding of a problem context and facilitate reasoning on the decision task (Rouse and Morris, 1986; Markman and Gentner, 2001). These representations enable individuals to make inferences and to extrapolate the meaning of their task beyond the basic facts available (Pitz and Sachs, 1984; Christ, 1993). In essence, problem representation provides individuals with a cognitive road map of how they could solve the decision task at hand (Wyer and Srull, 1980; Glaser, 1984).

Prior literature supports the contention that mindset guides and influences the creation of a problem representation because individuals are likely to focus on, remember, and even seek out information that conforms to their mindset (Pichert and Anderson 1977; Koehler, 1991). Those who have differing mindsets will then focus on or notice different information and recall differing knowledge, which will likely lead to the construction of problem representations that include different information (Pichert and Anderson, 1977; Payne et al., 1993). Prior psychology and accounting literature has provided empirical evidence to support the relationship between mindset and problem representation as well as problem representation’s influence on task performance (Armor and Taylor, 2003; Kadous and Sedor, 2004; Torelli and Kaikati, 2009). For example, Kadous and Sedor (2004) found that priming individuals with different mindsets
impacts the development of their problem representations, which in turn influenced their recommendations about whether to continue a project.

**Hypothesis Development**

We develop our research framework based on theories of mindset and problem representation, and their relationships to task performance. Our model is presented in Figure 1.

{Insert Figure 1 Here}

The first theoretical linkage in our framework represents our prediction that mindset (audit or fraud specialist) has a direct influence on fraud-related task performance. As previously discussed, auditors and fraud specialists have a different mindset in evaluating the company’s internal controls. Given that fraud specialists are more likely than auditors to suspect wrongdoings in the company’s reported financial statements, we anticipate they will tend to evaluate these statements as less reliable and at a higher risk level. In addition, we expect fraud specialists will have a higher propensity than auditors to take further investigative actions into company’s accounts to determine if fraud exists. Finally, we expect this trend to occur consistently across levels of actual fraud risk. Based on this, we propose the following hypotheses:

**H1a:** Individuals who possess the fraud specialist mindset will further investigate the company’s accounts in both high and low fraud risk conditions than individuals who possess the audit mindset.

**H1b:** Individuals who possess the fraud specialist mindset will assess the risk of financial statements fraud higher in both high and low fraud risk conditions than individuals who possess the audit mindset.

The second theoretical linkage in our research framework represents the effect of mindset on the development of problem representation. Based on the distinctions between auditor and
fraud specialists described earlier, we expect that they would develop problem representations containing different types of information. This leads to the following hypothesis:

**H2:** Individuals who possess the fraud specialist mindset will develop different problem representations than individuals who possess the audit mindset.

The third linkage in our research framework represents the assertion that mindset influences task performance through the effect of problem representation. Prior studies have shown that mindset has an indirect effect on decision-making performance via its impact on the development of problem representation (Allport, 1940; Gollwitzer, 1996; Bargh and Chartrand, 2000; Galinsky and Moskowitz, 2000; Gupta and Govindarajan, 2002; Kleinman and Palmon, 2009). Mindset influences the way in which individuals process task-related information, impacting the construction of their problem representations. These problem representations subsequently influence individual decision-making performance. Based on the theory and literature described previously, it can be asserted that one avenue through which mindset impacts fraud-related decision-making is through the mediation of problem representation. Based on this, we propose the following hypothesis:

**H3:** Problem representation mediates the relationship between mindset and fraud-related task performance.

## III. RESEARCH METHOD

**Design**

The hypotheses were tested in a 2 x 2 between-subjects design in an experiment in which participants made risk assessments and indicated their intention to further pursue possible misstatements in a set of financial statements. Prior to the case, participant mindset was imparted
through a mindset manipulation. After the judgment task, participant problem representation was elicited via a recall task.

**Participants**

A total of 135 senior-level auditing students from two large state universities participated in this study. Two observations were dropped due to inconsistent and erratic responses. Each participant completed the experimental task after learning about concepts of fraud and risk assessment in their first audit course. Our sample was comprised of 59 males (44 percent) and 74 females (56 percent). The average age of the participants was 25.01. On average, participants had 1.08 years of accounting related experience and 32 of them (24 percent) had interned in the accounting field. The participants did not differ between the treatment groups relative to these demographic characteristics. We also measured participants’ level of professional skepticism using the Hurtt (2010) scale and observed no discernable difference between our treatment groups. Demographic information pertaining to the participants is shown in Table 1.

*Insert Table 1 Here*

**Experimental Task and Procedures**

The experiment was conducted half-way through the semester in regularly scheduled sessions of two senior-level audit classes. We randomly assigned our participants to one of four treatment groups. All participants were supplied with the mindset manipulation materials instructing them to assume the role of either an auditor or a fraud specialist. Before proceeding to

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8 We used student subjects for three reasons. First, prior studies on mindset have used student participants because the theory related to mindset does not depend on special personal characteristics or professional expertise (Armor and Taylor, 2003; Gagné et al., 2003; Torelli and Kaikati, 2009). Second, Peecher and Solomon (2001) suggest that unless a theory exists to justify the need of using audit practitioners, accounting researchers should consider using students as the default condition for experimental subjects. Furthermore, the use of student subjects allows us to control for other external factors such as knowledge, experience, and training. If not controlled, these external factors could confound our ability to isolate the causal effects of a particular mindset on an individual’s fraud-related judgment and decision performance (Borthick et al. 2006). Thus, we believe that the selection of student subjects is both consistent with prior literature and appropriate for our study.
the next phase of the experiment, participants in all treatment groups were presented with questions to measure the extent to which they adopted their assigned mindset. We then instructed participants to review the case materials containing the fraud risk manipulation, randomized across participants. Participants were subsequently asked to determine the likelihood that fraud exists in each of these accounts and how likely they would be to take further action to investigate these accounts. Finally, participants are told to assess the overall fraud risk level for the company.

In the second part of the experiment, participants were instructed to complete a recall task by listing all of the important information they remember about the case company, for purposes of problem representation elicitation. Finally, participants were instructed to complete a post-experimental questionnaire containing the demographics questions and skepticism scale.

**Research Instrument**

Our research instrument contained narrative and instructions that influenced participants to adopt either an audit or fraud specialist mindset. We based our mindset manipulation on the Kadous and Sedor (2004) approach as they manipulated participants’ way of thinking by explicitly instructing them about their respective task objective. Similarly, we instructed our participants to assume the role of either an auditor or a fraud specialist. Participants read the description of their assigned role which includes specific task objectives and a list of key descriptors representative of either an audit or a fraud specialist mindset. We developed these

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9 To prevent participants from looking back to the case information, they were instructed not to revisit the case material under any circumstances. One of the researchers was present at all times to reinforce this prohibition.
mindset descriptors based on prior literature and input from experts.\textsuperscript{10} Figure 2 provides a detailed description of these key mindset factors.

\textit{Figure 2 Here}

We constructed our initial set of mindset factors by synthesizing relevant literature in the area of auditing and fraud (Bologna and Lindquist, 1987; Silverstone and Davia, 2005; Singleton et al., 2006). We then asked our experts to (1) comment on whether these factors were an adequate representation of their respective professions and (2) identify additional factors relevant to either an auditor or a fraud specialist. We revised these initial factors based on the comments received from our experts. To further ensure the validity of these mindset factors, we invited an audit expert and a fraud specialist who were not involved in the initial review to comment on the revised factors to determine whether the factors were an adequate representation of their respective professions. Their feedback suggested minor changes to these factors. This validation process yielded a total of nine unique characteristics contrasting the mindset of an auditor and a fraud specialist: materiality, misstatements, authenticity, internal control evaluation, audit-related issues, and potential fraud-related issues / fraud risk factors. We hypothesize that participant problem representation will be different in the directions as predicted in the specific recall categories presented in Table 4.

The case used in our experiment is adapted from Lindberg (1999).\textsuperscript{11} We manipulated fraud risk by varying our case context and by seeding fraud risk factors to suggest high or low fraud risk conditions. In the high fraud risk condition, management of the hypothetical company had committed fraud in both the company’s bad debt expense and product warranties expense,\textsuperscript{10} We constructed an expert panel based on Bologna and Lindquist’s (1987) criteria, which suggest selection of experts based on their credentials, licensure, certification, as well as writings and publications from his or her field of expertise. Our panel consisted of four audit experts and five forensic specialists.\textsuperscript{11} A similar variation of the case was used by Carpenter et al. (2011).
and these accounts were intentionally understated to artificially inflate reported net income. These accounts were not misstated in the low fraud risk condition. Additionally, we seeded elements of the fraud-triangle as outlined by SAS No. 99 in the case for both high and low fraud risk condition. For example, participants in the high fraud risk condition received information that the company’s key personnel would earn a cash bonus based on reported net income. Participants in the low fraud risk condition, on the other hand, received information that key personnel would earn a fixed cash bonus on a yearly basis.

Finally, the instrument elicited participants’ problem representation, preceded by a distractor task. As problem representation is an internal mental state that cannot be observed directly, it is necessary to rely on indirect measures (Chi et al, 1981; Lesgold et al., 1988; Bedard and Chi, 1993). The use of qualitative analysis is an empirically validated method to capture individuals’ problem representations (Chi et al., 1981). Commonly used qualitative analysis techniques include written or verbal protocol, sorting, and recall (Christ, 1993; Bierstaker et al., 1999; Kadous and Sedor, 2004; Hammersley, 2006; Choo and Curtis, 2000). When using recall to elicit problem representation, researchers frequently focus on either the quantity or quality of recalled information pertaining to their decision making task (Frederick and Libby, 1986; Christ, 1993; Hammersley, 2006). The recall task and preceding distracter exercise used in our experiment are adapted from Kadous and Sedor (2004).

**Measures**

Our measures are presented in Appendix 1. For each of the two accounts, participants responded to two statements used as our dependent measures: likelihood they will further

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12 According to SAS No. 99, bonuses contingent upon company’s operating results is a fraud risk factor related to fraudulent financial reporting (AICPA, 2002). Unlike the high fraud risk condition, management in the low fraud risk condition has little or no incentive to fraudulently report its financial data.

13 Recall quality typically refers to the type or characteristic of information recalled by the individual.
investigate the company’s bad debt expense and product warranties expense accounts (endpoints of “0=Not likely at all to take further action to investigate this account” and “10=Very likely to take further action to investigate this account”); and likelihood that fraud exists in the company’s bad debt expense and product warranties expense accounts, as well as the overall fraud risk assessment for the company (endpoints of “0=Very low” and “10=Very High”). Responses to the questions were averaged across the two accounts, and responses to the overall fraud risk question were averaged with the account-specific fraud-risk questions.

The data elicited during the recall task was coded by four researchers, two of whom were blind to the hypotheses. These researchers classified the information recalled by participants into nine categories. As stated previously, these categories were developed based on our expert panel and include materiality, misstatements, authenticity, internal control evaluation, audit-related issues, and potential fraud-related issues / fraud risk factors. Each of the coders was given specific coding instructions as and the definitions for these recall categories as listed in Appendix 2.

IV. RESULTS

Prior to analyzing our hypotheses, we assessed the validity of the obtained data. We validated our mindset manipulation by examining the results of our mindset elicitation scale. The scale is composed of the average of five questions, constructed on a scale of 0 to 10, such that a lower score is associated with an audit mindset and a higher score is associated with a fraud

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14 Consistent with prior studies (Christ, 1993; Hammersley et al., 1997; Hammersley, 2006), we used the Cohen Kappa coefficient to assess inter-rater reliability of the independent coders’ classification (Cohen, 1960). The Kappa coefficient for the first round of classification was 0.72. Based on Landis and Koch (1977), a Kappa coefficient in the range of 0.61 to 0.80 represents a substantial strength of non-chance agreement between the two independent coders. Thus, the Kappa coefficient provided support that there was a sufficient level of reliability between the two independent coders. The independent coders subsequently resolved all coding differences. Our coders classified a total of 1,284 recall items, which is an average recall per person of 9.56. Participants in the audit mindset group generated 652 recall items and those in the fraud specialist mindset group provided 632 items, which is not significantly different (t= 0.131, p= 0.896).
specialist mindset. Questions in the scale related to materiality, sampling, accounts discrepancies, misstatement, and internal control effectiveness. These questions are listed in Appendix 1. Results from independent samples t-tests between the two mindset treatment groups indicate our average mindset score was significantly lower in the audit mindset group (M= 2.496) than in the fraud specialist mindset group (M= 7.406; t=15.278, p= 0.000), indicating that the mindset manipulation was effective.

Next, we assessed the effectiveness of our fraud risk manipulation by examining participants’ recall of fraud-related issues / fraud risk factors of the cause company. We found that participants in the high fraud risk condition (M= 4.615) recalled significantly more fraud-related issues / fraud risk factors than those in the low fraud risk condition (M= 3.427; t=1.573, p= 0.059, one-tail), demonstrating that our fraud risk manipulation was effective.

In addition to the manipulation checks, we also assessed participants’ interest, effort, perceived knowledge, confidence level, and time spent on the experimental task. The concern was that participants’ performance on the experimental task could potentially be impacted by these factors. Our t-test analyses show there were no significant differences in mean responses among treatment groups for any of these variables. Based on the above analysis, it appears that all treatment groups were homogenous, the manipulations in this study were effective and were correctly perceived by the participants, the participants were sufficiently knowledgeable to adequately perform the experimental task, and the participants found the project to be interesting and put a reasonable amount of effort into the project.

**Hypothesis 1**

Hypothesis one predicts a main effect for mindset, such that individuals who possess the fraud specialist mindset will make different risk-related judgments than those who possess the
audit mindset. Table 2 presents the tests of these hypotheses. H1a predicts that individuals who acquired the fraud specialist mindset will be more likely to further investigate the company’s accounts in both high and low fraud risk conditions than those with the audit mindset. Using t-tests, we found that participants with the fraud specialist mindset (M= 8.321) are significantly more likely (t= -4.645, p= 0.000)\(^{15}\) to further investigate the company’s accounts than those with the audit mindset (M= 6.013) in the high fraud risk condition; we found similar results in the low fraud risk conditions where those with the fraud specialist mindset (M= 7.091) are significantly more likely (t= -4.738, p= 0.000) to further investigate the company’s accounts than those with the audit mindset (M= 4.071). These results support our prediction of H1a.

H1b predicts that individuals who possess the fraud specialist mindset will be more likely to assess risk of financial statement fraud higher in both high and low fraud risk conditions than those who possess the audit mindset. Using t-tests, we found participants with the fraud specialist mindset assessed total fraud risk (M= 7.303) significantly higher (t= -3.091, p= 0.003) than those with the audit mindset (M= 6.042) in the high fraud risk condition. Additionally, in the low fraud risk condition, participants in the fraud specialist mindset group assessed total fraud risk (M= 5.843) significantly higher (t= -3.998, p= 0.000) than those in the audit mindset group (M= 3.829).\(^{16}\)

\{Insert Table 2 Here\}

The above findings were confirmed in MANOVA analyses of the two measures as reported in Table 3. Therefore, H1a and H1b are supported.

\{Insert Table 3 Here\}

\(^{15}\)P-values reported here are one-tail, unless otherwise specified.  
\(^{16}\)We further examined H1a and H1b by controlling for potential covariates of gender, age, GPA, years of accounting related professional experience, effort, perceived knowledge, and confidence level. Our MANCOVA results showed that the mindset treatment is significant in all cases after controlling these for the covariates.
Hypothesis 2

Hypothesis two predicts that individuals who acquire the fraud specialist mindset will develop a problem representation that is different from individuals with the audit mindset. As discussed previously, a recall task was employed to elicit participants’ problem representations. To test H2, we compared the number of the specific types of information recalled by participants in their recall task. We expect that participants with the audit mindset will recall more items related to materiality, material misstatements, audit trail, internal control that is in place and being monitored, and audit-related issues than those who have a fraud specialist mindset. Participants with the fraud specialist mindset were expected to recall more items related to misstatements with no specific mention of materiality, whether a transaction has actually taken place, how the internal control system may be compromised, and potential fraud-related issues / fraud risk factors than those with the audit mindset.

We performed an independent samples t-test for each of the recall categories between the mindset treatment groups. Table 4 presents our results. As expected, participants with the audit mindset recalled significantly more items related to materiality than those with the fraud specialist mindset ($t= 4.105, p= 0.000$). Contrary to our expectation, participants with the fraud specialist mindset recalled significantly more ($t= -1.640, p=0.052$) items regarding material misstatement than those with the audit mindset, and, consistent with our expectations, they also recalled significantly more items related to misstatement with no specific mention of materiality ($t= -2.187, p= 0.016$). While we expect participants with the audit mindset would recall significantly more items with regard to audit trail than those with a fraud specialist mindset, no significance difference was observed between these two mindset groups. Alternatively, participants with fraud specialist mindset recalled significantly more ($t= -3.433, p= 0.001$) items
related to whether transactions have actually taken place than those with the audit mindset, as expected.

Consistent with our expectations, participants with the fraud specialist mindset recalled significantly more items related to how the company’s internal control system may be compromised \((t = -1.903, p = 0.030)\) as well as items regarding potential fraud-related issues / fraud risk factors than those with the audit mindset \((t = -5.068, p = 0.000)\).\(^{17}\) Additionally, as we have expected, participants with the audit mindset recalled significantly more items associated to whether the company’s internal control system was in place and being monitored than those with the fraud specialist mindset \((t = 1.607, p = 0.0555)\). They also recalled significantly more audit-related issues than those with the fraud specialist mindset \((t = 2.038, p = 0.022)\). Finally, we found that participants in the high fraud risk condition \((M = 4.615)\) recalled significantly more fraud-related issues / fraud risk factors than those in the low fraud risk condition \((M = 3.427; t=1.573, p= 0.059)\). Thus, our results show that individuals who acquired a fraud mindset develop problem representations that are different than those with audit mindsets. Specifically, our participant problem representations differed with regard materiality and misstatements, authenticity, audit-related and fraud-related issues. These results support H2.

\{Insert Table 4 Here\}

**Hypothesis 3**

Hypothesis three predicts that problem representation mediates the relationship between mindset and fraud-related decision making performance. To test for mediation, the independent variable must be significantly related to both the dependent variable and the mediator. Additionally, there must be a significant relationship between the mediator and the dependent

\(^{17}\) Potential fraud-related issues / fraud risk factor include interpersonal behaviors or actions that may create opportunities for members of the management to commit fraud. Such issues also comprise of unusual items that existed within the company’s accounts.
variable. A mediation is established when the effect of the independent variable on the dependent variable is lessened after controlling for the mediator (Baron and Kenny, 1986). Based on our analysis for H2, our mindset treatments generated two distinct problem representations, an audit-focus problem representation as well as a fraud-focus problem representation. For purposes of mediation testing, we employ the number of audit-related issues recalled by participants as the measure of audit-focus problem representation and the number of fraud-related issues / fraud risk factors recalled by participants as the fraud-focus problem representation. To test H3, we performed four path analyses on the direct effect of mindset on fraud-related task performance and the indirect effect on fraud-related task performance mediated by problem representation. Our path analyses are presented in Figure 3.

{Insert Figure 3 Here}

We first examined the direct effect of mindset on the likelihood of further investigating the company’s accounts and the indirect effect of mindset on this likelihood, mediated by the fraud-focus problem representation. Path analysis 1 shows that the first order path coefficient for the direct effect is significant and indicates mindset influences the propensity to further investigate the company’s accounts (Path coefficient= 2.708, F= 40.069, p= 0.000). The indirect effect is also significant whereby mindset influences the development of fraud-focus problem representation (Path coefficient= 3.534, F= 25.705, p= 0.001) and, as a result, impacts the propensity to further investigate the company’s account (Path coefficient= 0.212, F= 16.160, p= 0.001). More importantly, the path coefficient of the direct effect declines when the influence of the mediator is included in the model (Path coefficient= 2.341, F= 25.604, p= 0.001). This provides evidence that the effect of mindset on the propensity to further investigate the
company’s accounts is partially mediated by the fraud-focus problem representation (Sobel test statistic= 1.826, p= 0.068).

Finally, we examined the direct effect of mindset on the assessment of risk of financial statement fraud and the indirect effect of mindset on such assessment mediated by the fraud-focus problem representation. Path analysis 2 shows that the first order path coefficient for the direct effect is significant and indicates mindset influences the assessment of risk of financial statement fraud (Path coefficient= 1.688, F= 21.716, p= 0.000). Mindset influences the development of fraud-focus problem representation (Path coefficient= 3.534, F= 25.705, p= 0.000) and, as a result, impacted the assessment of risk of financial statement fraud (Path coefficient= 0.144, F= 11.156, p= 0.001). More importantly, the path coefficient of the direct effect declines when the influence of the mediator is included in the model (Path coefficient= 1.411, F= 12.888, p= 0.001). This provides evidence that the effect of mindset on the assessment of risk of financial statement fraud is partially mediated by the fraud-focus problem representation (Sobel test statistic= 1.646, p= 0.099). Thus, our path analyses results support H3.

We repeated our path analyses using the audit-focus problem representation (Figure 3, Path Analysis 3 and 4). Interestingly, our results show that the audit-focus problem representation did not mediate the effect of mindset on the likelihood of further investigating the company’s accounts or on the assessment of risk of financial statement fraud because the audit-focus problem representation was not significantly related to the dependent variables.

V. DISCUSSION

Fraud risk assessment is fundamental to effective and efficient financial statement auditing. However, prior literature has shown that auditors are generally ineffective in assessing
fraud risk (Joyce and Biddle, 1981; Hackenbrack, 1992; Cushing et al., 1995; Nieschwietz et al., 2000; Knapp and Knapp, 2001; Patterson and Noel, 2003; Allen et al., 2006). As an effort to improve auditors’ fraud risk assessment, the Public Company Accounting Oversight Board (PCAOB) Standing Advisory Group (SAG) suggested that accounting researchers consider how a fraud specialist mindset may impact auditors’ fraud risk assessment. The SAG believes that the fraud specialist mindset may help auditors to increase the likelihood of discovering fraud in an audit.

Currently there is no research that has experimentally examined the direct effects of mindset on fraud risk assessment. Additionally, while a few studies have examined the comparative performance differences between auditors and fraud specialists (Bortiz et al., 2013; Rose et al., 2012), these studies only focused on high fraud-risk contexts. Without examining fraud risk assessment performance between auditors and fraud specialists in the low fraud-risk context, it would be difficult to ascertain whether the fraud specialist mindset carries the potential to improve auditors’ overall fraud risk assessment. Thus, the purpose of this study is to heed the PCAOB’s call for research on auditor mindset, by examining the possibility of altering mindset with a relatively straightforward narrative and exploring whether these inculcated audit and fraud specialist mindsets differ in regard to fraud risk assessment effectiveness. Specifically, the goal of this study is to examine how a particular mindset influences an individual’s fraud-related decision making performance. Additionally, we examined the mediating effect of problem representation between mindset and fraud-related decision making performance. Finally, to fully understand the implications of adopting a fraud specialist mindset, we considered how the fraud specialist mindset impacts fraud risk assessment in both high and low fraud risk conditions.
We tested the theoretical predictions of our study by administering an experiment to 133 senior-level auditing students. After introducing experimental manipulations to the participants, they were asked to assess fraud risk for indicate whether they would further investigate twoe accounts, and to assess the overall risk of fraud for the company. Additionally, participants were instructed to complete a recall task. Consistent with our theoretical predictions, participants in the fraud specialist mindset treatment group assessed fraud risk higher were more likely to take further investigative action to examine the accounts. Thus, our results provided evidence to suggest that, in a high fraud risk situation, it is possible to increase auditors’ fraud risk assessment effectiveness by inducing them with a fraud specialist mindset or ways of thinking.

Results from our study also suggest that participants with the fraud specialist mindset developed a different problem representation than those with the audit mindset. Specifically, participants in the audit mindset group, as compared to those in the fraud specialist mindset group, recalled significantly more case information related to materiality as well as audit-related issues. This finding was consistent with our panel of experts’ evaluation that auditors focus primarily on materiality as a guide to their evaluation of audit evidence. Alternatively, our problem representation results suggested that fraud specialists are more concerned with fraud-related issues / fraud risk factors in their investigation. Our mediation analyses show that these different problem representations partially mediated the audit and fraud specialist mindset effect on fraud-related decision making.

Additionally, the results from this study suggest that there is a propensity for fraud specialist to assess fraud risk at a higher level in a low fraud risk context. As we have observed, individuals with the fraud specialist mindset assessed fraud risk above the midpoint (on a scale of 0 to 10) in both high and low fraud risk level. Fraud specialists who take a high fraud risk
approach to an audit may increase the likelihood of uncovering fraud. However, it may also result in over-auditing, increased audit cost, and consequently reducing audit efficiency when the risk of fraud is low. Assessing fraud risk as high may increase the effectiveness in detecting fraud during an audit, however it may result in over-auditing, increase audit cost, and consequently reduce audit efficiency when fraud is not present. Thus, a trade-off arises because assessing fraud risk too low when fraud is present exposes the audit firm to significant penalty, including litigation, costly settlement, and reputation loss (Palmrose, 1987). Previous studies (Bortiz et al. 2013; Rose et al. 2011) used an audit case containing only high fraud risk in their studies. Although they found that fraud specialists are more accurate than auditors in assessing fraud risk in high-risk contexts, it was unknown whether they would do the same in low-risk conditions. Thus, a contribution of our study is the determination that fraud specialists have a propensity to assess fraud risk higher in all conditions.

As with any research study, this study is subject to a number of limitations. First, it is a challenging task to design a fraud case to assess auditors’ fraud risk assessment performance. Due to the nature of an experiment, it is not always practical to include as much in-depth case information as auditors may typically possess. Thus, the case in this study may lack realism in practice. Nevertheless, the case used in our experiment is adapted from Lindberg (1999) and revised in subsequent fraud risk assessment studies (Carpenter et al., 2011). Thus, it provides a degree of assurance that this case is adequate for assessing fraud risk assessment performance. The second limitation pertains to the nature of individuals’ problem representations. As an internal cognitive state, problem representation cannot be observed directly. Thus, it is necessary to employ proxies to measure such an internal mental state. Nevertheless, we followed prior literature (i.e. Christ, 1993; Kadous and Sedor, 2004) by using recall as a validated method to
elicit individuals’ problem representations. Thus, the method used in this study was consistent with prior published studies.

Additionally, our research participants were senior-level accounting students. Consistent with Borthick et al. (2006), we chose a subject pool with relatively little knowledge of auditing and forensics, and thus no existing mindset differences. Our results demonstrate that it is possible to inculcate a particular mindset on inexperienced auditors. However, further research is needed to determine if the mindset of more experienced auditors can be altered in this manner.

Despite the above limitations, this study contributes to the literature by being the first to directly examine how different mindsets impact fraud-related judgments. The results of our study provide some encouraging news that it is possible to improve auditors’ fraud risk assessment performance through inducing a fraud specialist mindset. This has the potential to help audit firms develop low cost alternatives to train auditors in the acquisition of fraud-related knowledge and skill sets. Additionally, we found that the fraud specialist mindset, as compared to the audit mindset, has the propensity to lead individuals to assess fraud risk high in either a high or low fraud risk condition. Finally, our study also provided empirical evidence that individuals with the fraud specialist mindset developed different problem representations than those with the audit mindset.

Based on the results of our study, future research in this area could examine how to incorporate mindset into audit-related decision aids. Bonner (2007) suggests that decision aids typically have positive effects on the quality of cognitive processing specially problem representation. Thus, it is desirable for researchers to explore decision aids that would aid auditors’ in their fraud-related task. In addition to decision aid, it would be interesting for researchers to examine the relationships between the costs of the consultation of fraud specialists
and the auditors’ propensity to consult. As the results of our study has suggested that individuals with the fraud specialist mindset have the tendency to assess fraud risk at a higher level in both high and low fraud risk conditions, this may be a worthwhile topic for future research.

Finally, it would be interesting to examine the relationships among mindset, problem representation, and knowledge structure. While knowledge is kept constant in this study, it plays an important role in both fraud specialist and auditors’ judgment and decision making process. Recent studies have found that fraud specialists have a different knowledge structure than that of the auditors (see Rose et al., 2012). Thus, it would be valuable to conduct further research in this area.
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Appendix 1
Dependent Measures, Manipulation Checks Scales, and Recall Instructions

Dependent measures
Investigative action scale: Not likely at all to take further action to investigate this account (0) to Very likely to take further action to investigate this account (10)
Q1: How likely would you do the following in regard to the Lakeview Bad Debt Expense account?
Q2: How likely are you to do the following in regard to the Lakeview Product Warranties Expense account?

Fraud assessment scale: Very unlikely (0) to Very likely (10)
Q1: Based on all the information you have reviewed about Lakeview Lumber Inc., how likely do you think fraud exists in Lakeview’s Bad Debt Expense account?
Q2: Based on all the information you have reviewed about Lakeview Lumber Inc., how likely do you think fraud exists in Lakeview’s Product Warranties Expense account?

Manipulation check measures
Instructions to participants: Based on your understanding of the role and objective of a fraud specialist [or an auditor in the other mindset version], please rank the extent of your agreement with the following statements on the scale below.

Mindset scale: Strongly disagree (0) to Strongly agree (10)
Q1: You do not work with a materiality level.
Q2: You do not normally rely on sampling.
Q3: You would be concerned with minor discrepancies when evaluating your client’s accounts.
Q4: You would not be overly concerned with any immaterial misstatements in your client’s accounts.
Q5: You would be satisfied with the effectiveness of your client’s internal controls if you are able to determine that they have been implemented and properly monitored.

Recall Elicitation:
Instructions to participants: In the space provided below please list all of the important information that you can remember about Lakeview Lumber Inc. and the FY2008 audit. Write down the information in the order that you remember it. Start a new line for each piece of information. There is also space on the next page. You do not need to use up all the space provided for you, but please try to remember as much as you can.
Appendix 2
Recall Task Coding Instructions and Categories Definitions

Coder’s Instruction
You will be given a list of items in regard to individuals’ comments about a company. Based on your judgment, please classify these items into one of the following 12 categories. Definitions and examples of each of these categories are presented as follows:

(1) Materiality represents statements relating to the magnitude and significance of an accounting transaction or amount. Examples are:
“\textit{I will be using a threshold for materiality to test client’s accounts}”
“\textit{Bad debt expense and product warranty were under the materiality amount}”
“\textit{The client’s materiality level was 1\% of sales}”

(2a) Misstatements – material misstatement represents statements associated with any major discrepancies and material misstatements in client’s accounts. Example includes:
“\textit{The client’s fixed assets account was materially overstated}”

(2b) Misstatements – misstatement (with no mention of materiality) represents general statements related to client’s misstatements with no mention of materiality. Example includes:
“\textit{The client’s balance sheet was overstated}”

(3a) Authenticity – whether the transaction has proper audit trail represents statements associated with whether the recorded transaction was supported by a proper audit trail. Examples are:
“\textit{We are concerned with whether the client has adequate documentation}”
“\textit{The client provided us with proper documentation to support their reported transactions}”

(3b) Authenticity – whether the transaction has actually taken place represents statements related to whether a recorded transaction has actually taken place. Examples are:
“\textit{Verifying if transactions occurred}”
“\textit{Examining whether the recorded transaction took place}”

(4a) Internal control evaluation – whether the control was in place and being monitored represents statements related to observations of whether the company’s control was being put in place and monitored. Examples are:
“\textit{The client has fairly strong internal controls in place}”
“\textit{The client’s controls appeared to have been properly implemented}”

(4b) Internal control evaluation – how the control may be compromised represents statements associated with observations of how the company’s internal control may be circumvented or compromised. Examples are:
“\textit{Accounting manager at the company wants to loosen internal controls}”
“\textit{The controller knew how to take advantage of the company’s internal controls}”

(5) Audit-related issues represent statements associated with particular audit matters in regard to the client. Examples are:
“\textit{Karen the in-charge auditor was over the planned audit time}”
“\textit{The audit samples tested were valid}”
“\textit{Bad debt expenses were presented fairly and accurately}”

(6) Potential fraud-related issues / Fraud risk factors represent statements that are related to potential fraud situations. Examples are:
“\textit{The controller took out a loan to buy an expensive house}”
“\textit{Arbitrary reason for reduction in bad debt expense with no valid reasons}”
“\textit{John the controller is suspect to fraud by boosting net income}”
Figure 1
Research Framework

Problem Representation

Mindset (Fraud Specialist vs. Audit) -> Fraud-related Task Performance
**Figure 2**
**Description of Key Mindset Factors**

<table>
<thead>
<tr>
<th><strong>Key Audit Mindset Factors</strong></th>
<th><strong>Key Fraud Specialist Mindset Factors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Role and objective as an Auditor</strong></td>
<td><strong>Role and objective as a fraud specialist</strong></td>
</tr>
<tr>
<td>As an auditor, your primary responsibility is to gather documentation to determine whether the company’s reported financial statements taken as a whole (including footnotes) are stated fairly, in all material respects, in conformity with Generally Accepted Accounting Principles (GAAP).</td>
<td>As a fraud specialist, your primary responsibility is to determine whether fraud exists, regardless of its size or magnitude. You also have the responsibility to determine the overall extent of fraud (if it exists), how it occurred and how the risk of its future occurrences can be reduced or prevented.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Expectations for an auditor</strong></th>
<th><strong>Expectations for a fraud specialist</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>You would be asked to look at your client’s accounts either individually or in aggregate with other accounts. You would especially focus on accounts with a reasonable possibility of containing a material misstatement.</td>
<td>You would be asked to examine either a single account or a single transaction to see if fraud exists. You may also be asked to look at a series of transactions since fraud may not necessarily occur in a single transaction.</td>
</tr>
</tbody>
</table>

| You work with a materiality level. In other words, you are primarily concerned with material matters in an audit. Materiality is relevant to you because it serves as a guide to your evaluation of audit evidence. | You do not work with a materiality level. In other words, you are not concerned with the concept of materiality. Materiality is irrelevant to you because fraud may often occur below the materiality level. |

| You would not be expected to examine every transaction and you would generally rely on audit sampling. | You would be expected to examine everything in great depth and you would generally not rely on audit sampling. |

| You would not be concerned with minor discrepancies in any single account. You would only be concerned if these discrepancies are indicative of larger or pervasive problems. | You would be concerned with any minor discrepancies. You would assess these discrepancies to understand their nature and to determine if they are indicative of fraud. |

| You would generally have a predetermined time budget for your work. If you spend too much time examining one area, you may have to spend less time somewhere else or you may run the risk of going over budget. While time is of the essence in an audit, you still have to do a sufficient amount of work and should not intentionally reduce or eliminate a procedure. | You would generally not be driven by a fixed budget. You would examine your work and review certain findings at the end of each phase. This will give you the opportunity to assess whether additional work is required. You may request more time and resources for your investigation until you are satisfied with your assessment of whether fraud exists. |

<table>
<thead>
<tr>
<th><strong>How to think like an auditor</strong></th>
<th><strong>How to think like a fraud specialist</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>You should think about accounting records in terms of the availability of supporting documents and the authenticity of the audit trail. In other words, you have to decide whether there is valid documentation to support the recorded transactions and whether they are presented in conformance</td>
<td>You should think about accounting records in terms of the authenticity of the events and activities that are behind the reported transactions. In other words, you have to evaluate whether these transactions actually took place and are consistent with other</td>
</tr>
</tbody>
</table>
with Generally Accepted Accounting Principles (GAAP).

You should maintain an appropriate level of professional skepticism by having a questioning mind when you are evaluating audit evidence. Risk factors relating to fraudulent financial reporting include motive, opportunity, and rationalization. Although these factors are often present in situations where fraud exists, they do not necessarily indicate the existence of fraud.

You should keep in mind that the possibility that a material misstatement due to unintentional error or fraud could be present, regardless of your belief about your client’s honesty and integrity.

**Things to look for as an auditor**

You do not have to look at all of your client’s internal controls and you are not always required to test the operating effectiveness of them. However, you are expected to at least look at the design of your client’s internal controls. You are also to evaluate them in order to determine whether they are being implemented, in appropriate places, and are being monitored.

**Things to look for as a fraud specialist**

You should assume that fraud is possible even in the presence of strong internal control. No controls can prevent fraud if there is pressure, opportunity, and rationalization. Anyone is susceptible to committing fraud given the means, motive, and the opportunity. Thus, you should consider by whom and under what circumstances your client’s controls may be compromised.

You should be sensitive to, and on the lookout for, the warning signs of fraud. These warning signs are often referred to as red flags or anomalies indicative of fraud. You can often identify them if you are willing to look deeply for them. To discover fraud, it is important to be able to think like a thief by asking yourself how he or she would probe and exploit any weaknesses of a company.

You should keep in mind that things are not always as they appear to be. A visible immaterial misstatement may appear to be inconsequential, but the hidden portion of the misstatement could be substantial.

You should also consider the possibility of any unreported transactions. You should be sensitive to, and on the lookout for, the warning signs of fraud. These warning signs are often referred to as red flags or anomalies indicative of fraud. You can often identify them if you are willing to look deeply for them. To discover fraud, it is important to be able to think like a thief by asking yourself how he or she would probe and exploit any weaknesses of a company.

You should keep in mind that things are not always as they appear to be. A visible immaterial misstatement may appear to be inconsequential, but the hidden portion of the misstatement could be substantial.
Figure 3
Path Analyses

Path Analysis 1

Fraud-focus Problem Representation

Mindset

The likelihood of further investigating the company’s accounts

a: Path coefficient 3.534 (F= 25.705, p= 0.001)
b: Path coefficient 0.212 (F= 16.160, p= 0.001)
c: First order coefficient 2.708 (F= 40.069, p = 0.000)
c’: Path coefficient in the presence of the mediator 2.341 (F= 25.604, p= 0.001)
Sobel test statistic= 1.826, p= 0.068

Path Analysis 2

Fraud-focus Problem Representation

Mindset

The assessment of risk of financial statement fraud

a: Path coefficient 3.534 (F= 25.705, p = 0.000)
b: Path coefficient 0.144 (F= 11.156, p= 0.001)
c: First order coefficient 1.688 (F= 21.716, p = 0.000)
c’: Path coefficient in the presence of the mediator 1.411 (F= 12.888, p = 0.001)
Sobel test statistic= 1.646, p = 0.099
Figure 3
Path Analyses

Path Analysis 3

Audit-focus Problem Representation

Mindset

The likelihood of further investigating the company’s accounts

a: Path coefficient -0.505 (F= 4.162, p= 0.044)
b: Path coefficient 0.085 (F= 0.250, p= 0.616)
c: First order coefficient 2.708 (F= 40.069, p =0.000)
c’: Path coefficient in the presence of the mediator 2.838 (F=43.269, p= 0.001)
Sobel test statistic= -1.316, p= 0.188

Path Analysis 4

Audit-focus Problem Representation

Mindset

The assessment of risk of financial statement fraud

a: Path coefficient -0.505 (F= 4.162, p = 0.044)
b: Path coefficient 0.102 (F= 0.563, p= 0.454)
c: First order coefficient 1.688 (F= 21.716, p = 0.001)
c’: Path coefficient in the presence of the mediator 1.795 (F= 24.108, p= 0.001)
Sobel test statistic= -1.288, p= 0.198
<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Value</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of male participants</td>
<td>59 (44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>25.0</td>
<td>mean</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>20.0</td>
<td>minimum</td>
<td>51.0</td>
</tr>
<tr>
<td>Years of accounting experience</td>
<td>1.08</td>
<td>mean</td>
<td>1.93</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>minimum</td>
<td>11.00</td>
</tr>
<tr>
<td>Number of participants with accounting</td>
<td>32 (24%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>internship experience</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 2
Audit Mindset versus Fraud Specialist Mindset

Panel A: Investigative Action

<table>
<thead>
<tr>
<th>Fraud Risk Treatment</th>
<th>Mindset Treatment</th>
<th>Mean (SD)</th>
<th>N</th>
<th>Mean (SD)</th>
<th>N</th>
<th>Mean (SD)</th>
<th>N</th>
<th>t-value</th>
<th>p-value#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Audit</td>
<td>Fraud Specialist</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Fraud Risk Condition</td>
<td>6.013 (2.157)</td>
<td>8.321 (1.843)</td>
<td>7.185 (2.303)</td>
<td>65</td>
<td>-4.645</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Fraud Risk Condition</td>
<td>4.071 (2.860)</td>
<td>7.091 (2.353)</td>
<td>5.537 (3.018)</td>
<td>68</td>
<td>-4.738</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.999 (2.711)</td>
<td>7.706 (2.187)</td>
<td>6.342 (2.807)</td>
<td>133</td>
<td>-6.333</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Total Fraud Risk Assessment

<table>
<thead>
<tr>
<th>Fraud Risk Treatment</th>
<th>Mindset Treatment</th>
<th>Mean (SD)</th>
<th>N</th>
<th>Mean (SD)</th>
<th>N</th>
<th>Mean (SD)</th>
<th>N</th>
<th>t-value</th>
<th>p-value#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Audit</td>
<td>Fraud Specialist</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Fraud Risk Condition</td>
<td>6.042 (1.879)</td>
<td>7.303 (1.381)</td>
<td>6.682 (1.751)</td>
<td>65</td>
<td>-3.091</td>
<td>0.003**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Fraud Risk Condition</td>
<td>3.829 (2.157)</td>
<td>5.843 (1.988)</td>
<td>4.806 (2.297)</td>
<td>68</td>
<td>-3.998</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.886 (2.301)</td>
<td>6.573 (1.851)</td>
<td>5.723 (2.248)</td>
<td>133</td>
<td>-4.656</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#p-values are 1-tailed; * significance at 0.05; ** significance at 0.01
### Table 3

**Multiple Analysis of Variance – Test of Independent Variable on Dependent Variables - Hypothesis H1a and H1b**

<table>
<thead>
<tr>
<th>Source</th>
<th>Multivariate Results</th>
<th>Univariate Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p-value#</td>
</tr>
<tr>
<td>Mindset</td>
<td>21.441</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud Risk</td>
<td>15.760</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindset x Fraud Risk</td>
<td>.666</td>
<td>0.258</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#p-values are 1-tailed; * significance at 0.05; ** significance at 0.01
<table>
<thead>
<tr>
<th>Specific Types of Information Recalled</th>
<th>Mindset Treatment</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Audit Mean (SD)</td>
<td>Fraud Specialist Mean (SD)</td>
<td>t-value</td>
<td>p-value</td>
<td>Expectation of Number of Recall per Mindset</td>
<td></td>
</tr>
<tr>
<td>(1) Materiality</td>
<td>1.060 (1.278)</td>
<td>0.345 (0.349)</td>
<td>4.105</td>
<td>0.000***</td>
<td>Audit – High Fraud Specialist – Low Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(2a) Misstatements – material misstatement</td>
<td>0.179 (0.520)</td>
<td>0.364 (0.757)</td>
<td>-1.640</td>
<td>0.052*</td>
<td>Audit – High Fraud Specialist – Low Expectation not supported</td>
<td></td>
</tr>
<tr>
<td>(2b) Misstatements – misstatement (with no mention of materiality)</td>
<td>0.119 (0.445)</td>
<td>0.364 (0.797)</td>
<td>-2.187</td>
<td>0.016**</td>
<td>Audit – Low Fraud Specialist – High Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(3a) Authenticity – whether the transaction has proper audit trail</td>
<td>0.269 (0.592)</td>
<td>0.242 (0.466)</td>
<td>0.284</td>
<td>0.389</td>
<td>Audit – High Fraud Specialist – Low Expectation not supported</td>
<td></td>
</tr>
<tr>
<td>(3b) Authenticity – whether the transaction has actually taken place</td>
<td>0.000 (0.000)</td>
<td>0.303 (0.938)</td>
<td>-3.433</td>
<td>0.001***</td>
<td>Audit – Low Fraud Specialist – High Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(4a) Internal control evaluation – whether the control was in place and being monitored</td>
<td>0.194 (0.435)</td>
<td>0.091 (0.290)</td>
<td>1.607</td>
<td>0.055*</td>
<td>Audit – High Fraud Specialist – Low Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(4b) Internal control evaluation – how the control may be compromised</td>
<td>0.149 (0.359)</td>
<td>0.303 (0.554)</td>
<td>-1.903</td>
<td>0.030**</td>
<td>Audit – Low Fraud Specialist – High Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(5) Audit-related issues</td>
<td>1.657 (1.638)</td>
<td>1.152 (1.180)</td>
<td>2.038</td>
<td>0.022**</td>
<td>Audit – High Fraud Specialist – Low Expectation supported</td>
<td></td>
</tr>
<tr>
<td>(6) Potential fraud-related issues / Fraud risk factors</td>
<td>2.254 (3.390)</td>
<td>5.788 (4.573)</td>
<td>-5.068</td>
<td>0.000***</td>
<td>Audit – Low Fraud Specialist – High Expectation supported</td>
<td></td>
</tr>
</tbody>
</table>

1 Degrees of Freedom are 133
2 P-values are 1-tailed; * significance at 0.10; ** significance at 0.05; *** significance at 0.01