ENCOURAGING PROFESSIONAL SKEPTICISM IN THE INDUSTRY SPECIALIZATION ERA: A DUAL-PROCESS MODEL AND AN EXPERIMENTAL TEST

BY

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DISSERTATION

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ABSTRACT

I develop a framework that elucidates how the primary *target* of auditors' professional skepticism – audit evidence or their own judgment and decision making – interacts with other factors to affect auditors' professional judgments. As an initial test of the framework, I conduct an experiment that examines how the target of auditors' skepticism and industry specialization jointly affect auditors' judgments. When working inside their specialization, auditors make more automatic, intuitive judgments. Automaticity naturally manifests for industry specialists as a result of industry experience, social norms to appear knowledgeable and decisive, and their own expectations to proficiently interpret audit evidence. Priming industry specialists to be skeptical of audit evidence, therefore, has little influence on their judgments. In contrast, priming such auditors to be skeptical of their otherwise automated, intuitive judgment and decision making substantially alters their decision processing. They begin to question what they do and do not know, in an epistemological sense and, as a result, elevate their overall concern about material misstatements due to well-concealed fraud. This pattern of results is consistent with my framework's predictions and suggests that specialization is more about improving the interpretation and assimilation of domain evidence rather than enhancing reflective, self-critical thinking. It also suggests it would be beneficial to identify other factors that promote industry specialists' skepticism towards their judgment and decision making to make them more circumspect about the possibility of management fraud (cf., Bell, Peecher, and Solomon 2005).

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CHAPTER 1: INTRODUCTION

Audit standard setters and researchers have long recognized the importance of professional skepticism, defined in professional standards as having a questioning mind and critically assessing audit evidence (AICPA 2002, PCAOB 2007). An implicit assumption of the academic literature is that the primary *target* of auditors' skepticism is audit evidence (i.e., evidence skepticism). Bell, Peecher, and Solomon (2005), however, advocate for a new *target* of auditors' skepticism – their own judgment and decision making (i.e., judgment skepticism). In a recent review, Nelson (2009) introduces a model of professional skepticism in which three factors combine with audit evidence to influence auditors' professional judgments and actions: knowledge, traits, and incentives. In this dissertation, I integrate dual-processing theory from psychology (e.g., Smith and DeCoster 2000) into Nelson's (2009) model and use the resulting integrated framework to predict that auditors' industry specialization interacts with the target of their professional skepticism in influencing professional judgments.

I posit that specialization is more about improving auditors' interpretation and assimilation of domain evidence than about enhancing reflective, self-critical thinking. When working inside their specialization, auditors tend to make more automatic, intuitive judgments. Automaticity naturally manifests for specialists as a result of industry experience, social norms to appear knowledgeable and decisive, and their own expectations to proficiently interpret audit evidence (Logan 1988; Sloman 1996). Priming specialists to be skeptical of audit evidence, therefore, has relatively little influence on their judgments.[1] Priming them to be skeptical of their otherwise automated, intuitive decision processes, however, causes a relatively

[1] Elevated professional skepticism generally enhances audit effectiveness, but can be excessive and hinder audit efficiency and client relations (Nelson 2009). For theory testing, I can determine changes in professional skepticism attributable to the interplay of different skepticism targets and industry specialization, but not the optimal level of professional skepticism for society.

substantial shift in their decision processing. They begin to question what they do and do not know, in an epistemological sense and, as a result, elevate their concern about fraud.

This pattern suggests that specialists' proficiency in interpreting domain evidence comes at a previously un-indentified cost – suppressing a novice-like vigilance to question one's thinking. This cost is troubling as elevating one's professional skepticism has been put forth as a means of fending off motivational and judgmental biases (e.g., Peecher 1996). In addition, regulators allege that insufficient professional skepticism is pervasive (PCAOB 2007) and a primary cause of audit failures (Carmichael and Craig 1996) and SEC enforcement actions (Beasley, Carcello and Hermanson 2001). A potential contributing factor is that professional standards have only recently and indirectly begun to allude to auditors directing professional skepticism towards their own judgment and decision making (e.g., IFAC 2009). Specifically, international auditing standards now explicitly recognize that auditors' professional judgment can and should be evaluated and implicitly acknowledge the possibility of judgment errors; however, they neither educate nor equip the auditor for thinking about how to avoid making judgment errors in the first place (IFAC 2009). My integrated framework will be beneficial in identifying factors that promote judgment skepticism helping auditors consider potential judgment errors including being circumspect about potential management fraud (cf., Bell et al. 2005). Likewise, auditing firms may consider including judgment skepticism in their review and consultation processes, training programs, decision aids, and performance evaluations.

As an initial test of my framework, I conduct an experiment with a 2 x 3 between-participants design (*Specialization* X *Skepticism Target*) with 171 professional auditors. Auditors complete a preliminary analytical review task (with no seeded misstatement or overt fraud risk indicators) in the property and casualty insurance industry. As auditors rarely

encounter fraud (Ashton 1991), a context devoid of fraud risk indicators is ideal because of its conduciveness to intuitive, automatic judgments by specialists thereby allowing the strongest test of my theory. Using a partial match-mismatch design (Low 2004), I treat auditors specializing in insurance as specialists and all other auditors as non-specialists. I manipulate the target of auditors' skepticism using their supervisors' preferences as a prime. That is, the prime varies the degree to which it characterizes supervisors as preferring auditors to question audit evidence (Evidence Skepticism; ES) or their own judgment and decision making (Judgment Skepticism; JS). A third, unprimed, level of this factor is used as a control condition. The dependent measures for participants' self-critical professional judgments are the number and probability of fraud explanations along with the probabilities assigned to unknown misstatement explanations.[2]

Consistent with my integrated framework, specialists' professional judgments significantly depend on the target of their skepticism. Unprimed specialists are less concerned about unknown misstatements and well-concealed fraud than are unprimed non-specialists. In fact, none of the 19 specialists within the control condition generate a single fraud explanation. JS-condition specialists, however, generate more fraud explanations and assign a higher probability to unknown misstatement explanations compared to control-condition specialists. In other words, JS-condition specialists worry relatively more about what they do not know and doubt whether the absence of overt fraud risk indicators indicates the absence of fraud. ES-condition specialists, however, are less concerned about what they do not know, much like control-condition specialists. They do not increase consideration of fraud or unknown

[2] In the absence of fraud risk indicators, generating fraud explanations increases the justifiability of auditors' beliefs and potentially increases audit quality. For instance, medical research indicates the value of having diagnostic (e.g., fraud) hypotheses in one's initial hypothesis set in terms of evidence gathering (e.g., identifying subsequent fraud risk indicators) and ultimate diagnostic performance (Barrows et al. 1982). Also, generating fraud explanations can improve audit planning decisions (Hunton and Gold 2009) especially as fraud is most likely to go undetected when management goes to elaborate lengths to deceive (Bell et al. 2005).

misstatement explanations consistent with use of a highly automated judgment process and high baseline confidence in their ability to interpret evidence. Unlike specialists, non-specialists worry about what they do not know irrespective of the target of their skepticism, consistent with deliberative judgment processes triggered by industry unfamiliarity. This pattern of results manifests in two significant interactions where JS-condition specialists exhibit the largest increases (compared to the control-condition) in the number of fraud explanations and the probability of unknown misstatement explanations compared to the increases of ES-condition specialists and non-specialists subject to either prime.

This dissertation contributes to numerous academic literatures. My integrated framework augments Nelson's (2009) model of professional skepticism by illustrating the critical role that the *target* of auditors' skepticism – audit evidence or their own judgment and decision making – has on auditors' professional judgments and how this role is moderated by the extent of auditors' specialization. My framework also answers Nelson's call for future research that further specifies the form of his model, models how factors interactively affect professional judgments, and identifies ways to augment and improve professional judgment. I contribute to the industry specialization literature by demonstrating that specialization, in the absence of fraud risk indicators, may inhibit reflective, self-critical thinking and illustrating the importance of identifying factors that promote judgment skepticism in specialists.

The remainder of this dissertation proceeds as follows. In Chapter 2, I present my integrated framework. In Chapter 3, I use the framework to predict the effects of priming evidence skepticism and judgment skepticism for both specialists and non-specialists. In Chapter 4, I discuss the research method. I report results in Chapter 5. Chapter 6 concludes the paper with a discussion of limitations and suggestions for future research.

CHAPTER 2: THEORETICAL FRAMEWORK

In this chapter, I integrate a dual-process representation of professional judgment into Nelson's (2009) model of professional skepticism. By doing so, I illustrate the critical role that the *target* of auditors' skepticism – audit evidence or their own judgment and decision making – has on their professional judgments and how this role depends on other factors such as the extent of their specialization. Before presenting my integrated framework, I define professional skepticism and introduce Nelson's (2009) model of professional skepticism.

2.1 Professional Skepticism

Professional standards define professional skepticism as having a questioning mind and critically assessing audit evidence (AICPA 2002; IFAC 2009).[3] When making professional judgments, auditors can direct professional skepticism towards either audit evidence or their own judgment and decision making. Professional standards and audit researchers typically describe the target of auditors' professional skepticism as being audit evidence (Kinney 2000; AICPA 2002). For example, SAS No. 99 states that…

"...professional skepticism requires an ongoing questioning of whether the information and evidence obtained suggests that a material misstatement due to fraud has occurred. In exercising professional skepticism in gathering and evaluating evidence, the auditor should not be satisfied with less-than-persuasive evidence because of a belief that management is honest." (AICPA 2002, Paragraph 2.13)

Bell et al. (2005, 34) describe another target – auditors' own judgment and decision making. This targeting entails "…auditors being preemptively self-critical in anticipation of various arguments that others could bring against their beliefs or the evidential base they have or

[3] See Nelson (2009) for a review of academic and professional standard definitions of professional skepticism. Academics have proposed two different baseline orientations (i.e., standards of proof) with respect to this definition: neutrality and presumptive doubt (see Nelson 2009). I favor the presumptive doubt definition as it is more consistent with regulators' and society's expectations of auditors to prevent and detect fraud (Bell et al. 2005). However, it is not necessary to do so as my theory about roles of the target of auditors' skepticism stands with either orientation. The neutrality definition is also problematic as asking auditors to be accurate (i.e., neutral) may threaten obtainment of client-aligned directional goals and increase their propensity to agree with management (Kadous et al. 2003).

have not relied upon to form such beliefs." Preemptive self-criticism is a method of coping with accountability, particularly to parties with unknown preferences, and entails thinking in flexible, multidimensional ways (Tetlock 1983a; Tetlock 1983b; Tetlock, Skitka, and Boettger 1989). Unlike evidence skepticism, judgment skepticism targets the auditors' own judgment and decision making and involves embracing the potential fallibility of their judgments. It recognizes the possibility of unknown misstatement explanations including well-concealed fraud (even when not overtly indicated by the evidence) along with other ways in which their judgment could be flawed. An auditor exercising judgment skepticism would also consider potential overconfidence through realization that even experts are prone to judgment errors. Judgment skepticism further applies pressure to the "illusion of objectivity" associated with otherwise, unconscious motivated reasoning (Pyszczynski and Greenberg 1987).[4] This pressure on the reasonableness of motivated reasoning is consistent with professional skepticism being put forth as a means of fending off motivational biases favoring management's preferred conclusions (e.g., Peecher 1996) and other judgmental biases.[5]

2.2 Nelson's Model of Professional Skepticism

Nelson (2009) integrated the extant literature on professional skepticism into a model that illustrates how auditor knowledge, traits, and incentives combine with audit evidence to produce professional judgments and actions that reflect professional skepticism (Figure 1). The model is recursive in that evidence is both an input (Link 2) and output (Link 11) of auditor decision processing whereby the output evidence becomes part of the auditor's experience (Link 12) and

[4] The motivated reasoning literature examines how individuals' directional or accuracy goals affect their decision processes and resulting judgments (Kunda 1990). Motivated reasoning, which need not be conscious, increases the likelihood of individuals arriving at preferred conclusions while maintaining a semblance of rationality and justifiability (i.e., an "illusion of objectivity").

[5] With respect to motivational biases, auditors, to varying degrees, adopt client preferences (McMillan and White 1993; Glover, Prawitt and Wilks 2005) and exploit ambiguity to justify them (Hackenbrack and Nelson 1996; Salterio and Koonce 1997; Kadous et al. 2003). See Smith and Kida (1991) for a discussion of auditor proneness to judgmental biases and Kennedy (1995) for debiasing methods.

future input evidence into subsequent decision processing (Link 13). Skeptical judgments relate to the auditor's cognition and state of mind (e.g., hypothesis generation and probability judgment) while skeptical actions are an attribute of auditor performance (e.g., planning decisions, disposition of audit differences, audit reporting).[6] The judgment-action distinction is important as skeptical judgments do not always translate into skeptical actions (Link 1; Shaub and Lawrence 1996). In addition to evidence, the model includes three determinants of skeptical judgments (Links 3-5) and actions (Links 8-10): knowledge, traits, and incentives.[7]

Knowledge is a product of traits (Link 6) and audit experience (Link 7) and includes knowledge of evidential patterns and frequencies of non-misstatement and misstatement explanations (cf., Libby and Luft 1993). Knowledge can promote skeptical judgments and actions due to heightened sensitivity to risk factors (Low 2004) and more complete problem representations enabling auditors to better identify partial cue patterns suggestive of misstatement, assess higher likelihoods of material misstatement (in the presence of a seeded misstatement), and plan audit procedures that are better able to discriminate whether such a misstatement exists (Hammersley 2006). However, knowledge may also hinder skeptical judgments and actions if it leads auditors to assume high frequency non-misstatement explanations are correct and missing information is consistent with non-misstatement explanations. As discussed in Chapter 3, knowledge also may hinder professional skepticism, in the form of self-criticism, due to increased automaticity of decision processing.

[6] Nelson (2009) uses the term skeptical judgments to describe professional judgments that reflect professional skepticism. I use the more general professional judgment terminology.

[7] Although not specifically modeled in Figure 1, Nelson acknowledges the possibility of interactive effects of the determinants on skeptical judgments and actions. For example, auditors' response to incentives is thought to depend upon their ethical development / moral reasoning (i.e., traits; see Jones, Massey and Thorne 2003 for a review). As another example, Johnstone, Bedard and Biggs (2002) provide evidence of an interaction between litigation risk (i.e., incentives) and knowledge in the generation of financial reporting alternatives. My integrated framework will help guide future research on other potential interactions.

Traits are non-knowledge auditor attributes that are usually considered fixed once the auditor commences audit experience and training (see Brewster (2009) for a notable exception). Nelson (2009) divides traits into three categories: problem-solving ability, ethical/moral reasoning, and dispositional skepticism (e.g., Hurtt 2009). Problem-solving ability can increase skeptical judgments and actions as raw intelligence helps auditors identify potential misstatements (e.g., Bonner and Lewis 1990). Higher (lower) ethical/moral reasoning increases (decreases) skeptical judgments and actions via heightened (lower) sensitivity to evidence about client competence, integrity, and potential inappropriate behavior (see Jones et al. (2003) for a review). Auditors also differ in their general disposition towards skeptical judgments and actions (Quadackers, Groot and Wright 2008; Hurtt 2009).

Auditors balance a multitude of countervailing skepticism-related incentives that may be direct or indirect, immediate or probabilistic, and financial or social (Nelson 2009). Examples of incentives that promote skeptical judgments and actions include regulation, litigation, and reputation loss. Examples of incentives that hinder skeptical judgments and actions include client satisfaction/retention concerns and budget/fee pressures. Supervisor preferences, the social incentive used in this dissertation, can promote professional skepticism by invoking accountability if subordinates 1) realize the possibility of their own judgments being biased or 2) perceive such preferences to be diagnostic of increased risk of misstatement. On the other hand, supervisor preferences could threaten subordinates' self-concept or self-esteem leading to active justification of current judgments (i.e., defensive bolstering; Fisher, Nadler and Whitcher-Alagna 1982; Nadler and Fisher 1986; Deelstra et al. 2003).[8] For instance, some auditors may interpret supervisor skeptical preferences as questioning their objectivity, competence, or professionalism.

[8] Supervisor preferences can also induce pressures to conform or be perceived as diagnostic of decreased risk of misstatement. For example, Peecher (1996) provides evidence that lax supervisor preferences led to increased

2.3 A Dual-Process Representation of Professional Judgment

Although research supports Nelson's (2009) inclusion of these determinants (knowledge, traits, and incentives), little is known about the underlying cognition they invoke in producing professional judgments. In this section, I present an integrated framework (See Figure 2) whereby Nelson's (2009) determinants, when combined with audit evidence, affect auditors' dual-processing (Smith and DeCoster 2000; Evans 2008). Dual-processing not only directly influences the targets of auditors' professional skepticism (evidence or their own judgment and decision making), but also moderates the extent to which determinants shift these targets. Before elaborating on these effects, I briefly review research on dual-process models.

Psychologists have used dual-process models to explain a wide array of phenomena including persuasion, attitudinal access, interpersonal perception, attributional inference, social judgment, and stereotyping (see Smith and DeCoster (2000) and Evans (2008) for reviews). These models distinguish between two modes of cognitive processing: automatic and controlled (e.g., Schneider and Shiffrin 1977).[9] Individuals use both modes simultaneously with (automatic) controlled processing being (fast, effortless, involuntary, and non-conscious) slow, effortful, voluntary, and conscious (Evans 2008). The relative use of each mode is thought to depend on an individual's cognitive capacity and motivation (Smith and DeCoster 2000).[10] If

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likelihood assessments of client explanations (i.e., decreased professional skepticism). Auditors may also perceive supervisor preferences as an accuracy goal resulting in increased cognitive effort devoted to justifying their preexisting directional goals (Kadous, Kennedy and Peecher 2003).

[9] There are several dual-process models in psychology used to explain diverse phenomena resulting in different labels and slight variations in substance (e.g., heuristic vs. systematic (Chen and Chaiken 1999), system 1 vs. system 2 (Evans 2008), experiential vs. rational (Epstein 1994)). I am not testing, however, whether auditors follow a specific dual-process model, but simply arguing that Nelson's (2009) determinants affect where auditors fall on the dual-process continuum. As the two general process labels, automatic and controlled, apply to most dual-process models and are relatively easy to understand (Moore and Loewenstein 2004), I use these labels in my integrated framework.

[10] In Figure 2, the y-axis represents the composition of audit processing as the relative use of controlled and automatic processing with the extent of each type of processing depending on Nelson's (2009) determinants. Evans (2008) discusses how models differ in their representation of the simultaneous nature of dual processing. *Parallel-competitive* models assume that both processing modes truly occur simultaneously but vary in extent. *Default-*

cognitive capacity is constrained (unconstrained), individuals rely on automatic (controlled) processing (Shiv and Fedorikhin 1999). Motivation to engage in more effortful, controlled processing differs based on individual, task, and environmental factors.

Where auditors reside on the dual-process continuum has implications for where they target their professional skepticism. As automatic processing often operates outside of conscious awareness (Chartrand and Bargh 1996; Bargh and Chartrand 1999; Bargh et al. 2001), individuals have difficulty reflecting upon automatic judgments (Gilbert, Krull and Pelham 1988a; Gilbert et al. 1988b; Gilbert, Krull and Malone 1990). Consequently, auditors are less likely to direct professional skepticism towards their automatic decision processing than towards their controlled processing, especially as preemptive self-criticism is associated with conscious, effortful processing (e.g., Tetlock et al. 1989). Nonetheless, as automatic processes are most common for habitual, repetitive, and rehearsed behaviors (Logan 1988; Gobet and Simon 1996; Sloman 1996), individuals gain confidence in their intuitive and efficient automatic processing. As a result, auditors' automatic processing leads to proficiency in evaluating evidence.

As controlled processing is more conscious, effortful and deliberate than automatic processing, individuals have better self-insight into the former (Gilbert et al. 1988a; Gilbert et al. 1988b; Gilbert et al. 1990). In addition, controlled processing promotes counterfactual thinking and consideration of alternative explanations whereby auditors may consider potential judgment errors including management fraud (Koonce 1992; Clark 1997). As controlled processing is most common for non-routine tasks, auditors tend to be conservative when auditing outside of their domain expertise (Taylor 2000). Essentially, the unfamiliarity of the task is a cue that

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interventionist models assume that automatic processing is the default mode with controlled processing serving a supervisory / endorsement role over automatic processing with individuals repeatedly switching being the two processing modes. My theory about the extent of each processing mode depending on Nelson's determinants holds under both classes of dual-process models.

established routines may be ineffective and more deliberate analysis would likely be beneficial. Cumulatively, these factors indicate that auditors' controlled processing is likely associated with a relatively higher level of professional skepticism towards both audit evidence and their judgment and decision making.

I posit that audit evidence, knowledge, traits, and incentives influence where auditors reside on the dual-process continuum (See Figure 2). As automatic processing is most common for habitual, repetitive, and rehearsed behaviors, knowledge (e.g., industry specialization) promotes automaticity. Anderson's (1983, 1987) theory of Adapted Control of Thought (ACT*) helps illustrate this relationship between knowledge and automaticity (Anderson 1992). His theory describes how knowledge is initially stored in declarative form (e.g., you must use a key to start a car), but with experience becomes a largely unconscious, automatic production rule.

Likewise, automatic (controlled) processing is more likely for frequently (infrequently) encountered patterns of evidence such as the lack (presence) of fraud risk indicators (Ashton 1991). Traits may well be associated with controlled (automatic) automatic processing such as having a high (low) skeptical disposition as skeptical individuals tend to expand their information search and delay judgment (Hurtt 2009). Finally, incentives such as high (low) litigation risk can lead to more controlled (automatic) processing as auditors use controlled processing to guard against audit failure on high litigation risk clients. In the next chapter, I describe how the efficacy of a social incentive, supervisor preferences emphasizing different skepticism targets (evidence or auditors' own judgment and decision making), in influencing subordinates' self-critical professional judgments depends on where auditors lie on the dual-process continuum.

CHAPTER 3: HYPOTHESIS DEVELOPMENT

In this chapter, I use my integrated framework to predict that 1) specialization inhibits self-critical thinking and 2) the effects of priming auditors to direct their skepticism towards evidence or their judgment and decision making depends on where they reside, as a result of their specialization, on the dual-process continuum. Priming specialists to target their judgment and decision making significantly shifts their position on the continuum towards more deliberate, self-critical processing. This shift suggests an interaction of specialization and the target of auditors' skepticism (evidence or their own judgment and decision making; manipulated via supervisor preferences) on their self-critical professional judgments. Specifically, I predict judgment-skepticism-condition specialists to exhibit the largest increase in self-critical professional judgments (compared to unprimed self-critical professional judgments) compared to the increases of evidence-skepticism-condition specialists and non-specialists subject to either prime.

3.1 Industry Specialization and Self-Critical Thinking

Public accounting firms designate auditors as industry specialists when they focus (i.e., specialize) in audits of the financial statements of firms in a particular industry. Although the designation officially recognizes the auditor as an industry specialist, it is the knowledge acquired from experiences auditing firms in a particular industry that truly makes the auditor a specialist (Libby 1995; Solomon, Shields and Whittington 1999).[11] Specialists acquire knowledge through experience from both indirect (e.g., firm training) and direct (e.g., working on industry audit engagements) sources including how macro-economic forces and industry trends potentially explain fluctuations in account balances (Solomon et al. 1999).

[11] I could use the industry-specific experience or industry specialization terminology interchangeably without affecting my predictions or inferences from my results. The amount of industry-specific experience required for the industry specialist designation is unspecified by the firms or prior research.

Specialization has numerous audit quality benefits. It improves auditors' performance in misstatement hypothesis generation and analytical procedures leading to superior performance in misstatement detection (e.g., Bedard and Biggs 1991; Johnson, Jamal and Berryman 1991; Wright and Wright 1997). Specialization also leads to heightened sensitivity to risk factors (Low 2004) and more complete problem representations enabling auditors to better identify partial cue patterns suggestive of misstatement, assess higher likelihoods of material misstatement (in the presence of a seeded misstatement), and plan audit procedures that are better able to discriminate whether such a misstatement exists (Hammersley 2006).

In light of my integrated framework, these benefits indicate that specialization relates more to improving auditors' interpretation and assimilation of domain evidence than enhancing reflective, self-critical thinking. That is, there are several cognitive and motivational factors that make specialists less apt to be self-critical than non-specialists. Specialization increases automaticity of decision processing as automatic processes are most common for habitual, repetitive, and rehearsed behaviors (Logan 1988; Gobet and Simon 1996; Sloman 1996). Within Anderson's (1983, 1987) ACT* model, auditors' declarative knowledge (e.g., potential explanations for unexpected fluctuations in account balances) becomes more proceduralized (i.e., automatic). Likewise, specialization increases auditors' confidence in their ability to assimilate evidence into risk assessments (Taylor 2000) coupled with pressures to appear knowledgeable and decisive.[12]

[12] Taylor's (2000) result builds on psychology literature documenting knowledge as an important determinant of confidence (Ellsberg 1961; Frisch and Baron 1988). In fact, recognized experts tend to be overconfident (e.g., Fischhoff et al. 1988; Zacharias and Shepherd 2001; Malmendier and Tate 2005). Overconfidence occurs when individuals overestimate their knowledge or ability versus a normative benchmark and has behavioral consequences such as elevating the perceived informativeness of confirmatory evidence (e.g., Swann and Giuliano 1987; Klayman et al. 1999). Although less confident, novices are often more overconfident than experts (Kruger and Dunning 1999). The theory underlying my hypotheses only requires that specialists are more confident than non-specialists.

As automatic processing often operates outside of conscious awareness (Chartrand and Bargh 1996; Bargh and Chartrand 1999; Bargh et al. 2001), auditors are less likely to reflect upon automatic judgments. Automatic judgments are typically the first on the scene and have powerful effects on controlled processes such as informational retrieval from memory and evidence evaluation (Bargh 1989; Epstein et al. 1992; Most et al. 2001). Specialization-induced automaticity also leads to a higher degree of unconscious certainty (Elliott, Dolan and Frith 2000; Burton 2008). With experience, neural linkages strengthen and become increasingly difficult to consciously override (LeDoux, Romanski and Xagoraris 1991; Elliott et al. 2000). These strengthened linkages likely lead specialists to become unconsciously certain that particular explanations are correct. If auditors are unconsciously certain, they are less likely to consciously consider their judgment fallibility.

Specialization-induced automaticity is especially likely in the absence of fraud risk indicators as automatic processes are triggered by activation of previously learned associations (Fiske 1998) and auditors have limited first-hand experience with (especially fraud-related) misstatements (Ashton 1991; Solomon et al. 1999). Non-specialists, on the other hand, are likely to use more controlled processing due to industry familiarity. As non-specialists are less confident and more conservative (Taylor 2000), such processing is likely more deliberate and self-critical. Cumulatively, in the absence of fraud risk indicators, these factors make specialists less likely to worry about their judgments that were based on their interpretations of evidence including the possibility of unknown misstatement explanations and well-concealed fraud (i.e., not overtly indicated by the evidence).

H1: In the absence of fraud risk indicators, industry specialists' unprimed professional judgments will be less self-critical than non-specialists' unprimed professional judgments.

3.2 Targets of Professional Skepticism

In H1, I predict that specialists' professional judgments will be less self-critical than those of non-specialists due to specialists' intuitive, automatic decision processing and confidence in their ability to interpret evidence. In this section, I examine how to promote self-criticism by shifting the target of auditor skepticism. My integrated framework specifies that the efficacy of priming evidence and judgment skepticism in promoting self-critical professional judgments depends on where (unprimed) auditors otherwise reside on the dual-process continuum.

3.2.1 Evidence Skepticism

I use supervisor preferences as my manipulation of the target of professional skepticism.[13] Previous research has not documented consistent benefits of supervisors emphasizing audit evidence as the target of auditors' skepticism nor examined its potential interactive relationship with industry specialization. For example, Peecher (1996) examined auditors' likelihood assessments of client explanations and generation of alternative explanations for an unexpected fluctuation in preliminary analytical review conditional on their supervisors emphasizing being skeptical of evidence, objective, or fully utilizing the client's insight. He observed no difference in professional judgments of objective-condition auditors and skeptical-condition auditors. Brown, Peecher and Solomon (1999) found that auditors asked to be skeptical of evidence evaluated its expected diagnosticity such that they were prone to disconfirm client management's explanations (i.e., disconfirmation proneness), but these same auditors were also prone to overestimate the value of evidence even when its expected diagnosticity was zero (i.e.,

[13] Supervisor preferences are essentially an accountability manipulation but the purpose is not to examine how auditors respond to complex systems of multiple accountabilities (see Gibbins and Newton (1994) for a review). The primary purpose is to use a strong and direct method of manipulating the target of auditors' professional skepticism.

information proneness). If auditors fail to discriminate diagnostic from non-diagnostic evidence, their belief revision and professional judgment are impaired, potentially to a degree that comprises audit effectiveness and outweighs any audit effectiveness benefits of being prone to disconfirm client management's explanations. Carpenter and Reimers (2009) found that auditors elevate fraud risk assessments in response to evidence skepticism preferences, but only in the presence of overt fraud risk indicators.[14]

My integrated framework predicts that evidence skepticism preferences will not alter the dual-processing of neither specialists nor non-specialists. As previously discussed, non-specialists are likely to use controlled processing (i.e., deliberate, conscious, self-critical). And, as industry unfamiliarity elevates the risk of misinterpreting evidence, non-specialists likely direct a relatively higher degree of skepticism towards evidence, irrespective (i.e., whether primed or not) of evidence skepticism preferences.

Specialists' judgments, though, tend to be more automatic (i.e., effortless, non-conscious, intuitive) thereby reducing the likelihood that they will adjust their decision processing in response to evidence skepticism preferences. As specialization-induced automaticity is often non-conscious (e.g., Bargh et al. 2001), highly confident specialists are less likely to be preemptively self-critical of automatic judgments and may even experience unconscious certainty whereby they are unconsciously certain that a particular explanation is correct (Elliott et al. 2000; Burton 2008). In addition, specialists face pressures to have and are confident in their proficiency in evidence evaluation (Taylor 2000). That is, specialists are confident in their ability to evaluate and assimilate evidence likely resulting in a perception that there are limited,

[14] Concluding that evidence skepticism preferences improve auditors' ability to detect fraud, based on these results, is tenuous for two reasons. One, fraud is most likely to go undetected in the absence of fraud risk indicators (Bell et al. 2005; Trotman 2006). Two, the authors did not use specialists who are more likely to recognize patterns indicative of misstatement irrespective of supervisor preferences (Hammersley 2006) and whom I predict to be unlikely to elevate skepticism in response to evidence skepticism preferences.

if any, benefits to elevating evidence skepticism, especially given the lack of overt fraud risk indicators. Therefore, asking specialists to question their processing of evidence is unlikely to invoke more controlled processing or self-criticism on a seemingly, routine analytical review task.

3.2.2 Judgment Skepticism

Unlike (like) evidence skepticism preferences, judgment skepticism preferences likely alter specialists' (do not alter non-specialists') position on the dual-process continuum. As previously discussed, non-specialists are likely to use controlled processing (i.e., deliberate, conscious, self-critical). And, as industry unfamiliarity elevates the risk of making incorrect judgments, non-specialists likely direct a relatively higher degree of skepticism towards their judgment and decision making, irrespective of judgment skepticism preferences. They realize they are working in an unfamiliar industry and, thus, actively consider what they do not know such as unknown misstatements and well-concealed fraud.

As previously discussed, evidence skepticism preferences are unlikely to alter specialists' decision processing due to relatively high automaticity and judgment confidence. By shifting the skepticism target to the auditor's judgment and decision making, however, judgment skepticism preferences attack auditors' confidence by highlighting common expert judgment errors and urging them to consider the fallibility of their judgments. For example, judgment skepticism preferences might emphasize how experts are notoriously overconfident (e.g., Fischhoff, Slovic and Lichtenstein 1988; Zacharias and Shepherd 2001; Malmendier and Tate 2005). Similarly, judgment skepticism preferences imply that part of being a consummate professional is questioning one's judgment and decision making (Campbell and Hughes 2005). Cumulatively, judgment skepticism preferences activate the possibility of unknown explanations in specialists'

working memory (Thomas et al. 2008). Activation of unknown explanations in working memory serves as both a motivation and cue for the auditor to be self-critical, consistent with preemptive self-criticism being most likely when dealing with the unknown (Tetlock et al. 1989). The activation cues auditors that their judgments may be fallible and motivates them to alter their decision processing to guard against audit failure.

The resulting increase in controlled processing likely will lead auditors to respond by considering what they do not know in an epistemological sense and increase the probability they assign to unknown misstatement explanations. Essentially, auditors are assessing the probability of potential misstatement explanations of which they are unaware. In the absence of overt fraud risk indicators, this processing likely results in auditors recognizing the possibility of well-concealed fraud.

In summary, neither evidence skepticism nor judgment skepticism preferences are likely to alter non-specialists' position on the dual-process continuum due to controlled processing triggered by industry unfamiliarity. However, judgment skepticism preferences are relatively more likely than evidence skepticism preferences to alter specialists' position on the dual-process continuum. Judgment skepticism preferences serve as a motivation and cue to be self-critical of their otherwise intuitive, automatic decision processing to account for potential judgment errors such as misstatement explanations not indicated by the evidence. Such consideration includes failure to sufficiently consider well-concealed fraud, a potential, very serious judgment error.

H2: In the absence of fraud risk indicators, the difference between primed and unprimed auditors' self-critical professional judgments will be greatest when specialists are primed to question their own judgment and decision making, compared to audit evidence, and compared to when non-specialists are primed to question either their own judgment and decision making or audit evidence.

See Figure 3 for graphical representation of H2.

CHAPTER 4: RESEARCH METHOD

I employ a 2 x 3 (one measured factor and one manipulated factor) between-participants experimental design where practicing auditors complete a preliminary analytical review task for a property and casualty insurance client (see Appendix A for the experimental materials). Participants generate explanations for an unexpected ratio fluctuation, assign probabilities to these and unknown explanations, and assess the aggregate risk of material misstatement. I use a partial match-mismatch design (Low 2004) considering auditors specializing within insurance to be specialists and auditors specializing in all other industries to be non-specialists.[15] To manipulate the target of auditor skepticism, I use supervisor preferences with the skepticism emphasis predominantly being on either audit evidence (evidence skepticism; hereafter *ES*) or on the auditor's own judgment and decision making (judgment skepticism; hereafter *JS*) along with a control condition.

4.1 Participants

I employ two data collection methods (internet and paper-based) and donate $5 to a charity selected by each participant.[16] Three-hundred seventy one practicing auditors, from

[15] A complete match-mismatch design (e.g., Solomon et al. 1999; Hammersley 2006) entails two groups of specialists completing two industry-specific audit tasks in a within-participants manipulation resulting in a matched and mismatched observation for each participant. I use a partial match-mismatch design to increase the number of auditors qualifying to participate in my study and to keep the experiment at a reasonable length. Using a complete match-mismatch design would increase power as each group acts as their own control and avoid the correlated omitted variables problem associated with measured variables. I control for non-specialists' insurance and closely related industry experience to address correlated omitted variables.

[16] As online recruiting efforts heavily targeted insurance industry specialists, there is significantly higher rate of such specialists in the internet responses (Internet = 47.5%; Paper = 15.4%; $\chi^2_1 = 20.75$; $p_{\text{two-tailed}} < 0.001$). As only seniors attended the firm training sessions, the internet sample has more experienced auditors (Internet = 8.0 years; Paper = 3.7 years; $t_{169} = 5.87$; $p_{\text{two-tailed}} < 0.001$). Consequently, a concern is that paper-based respondents are, in general, more deliberate and self-critical than internet-respondents rather than due to non-specialists' industry unfamiliarity. This possibility is unlikely as internet respondents devote more time to the task (2.5 minutes or 14% longer; $p_{\text{two-tailed}} = 0.007$) and generate 1.36 additional self-generated explanations ($p_{\text{two-tailed}} < 0.001$). I also control for response mode, general experience, and closely-related industry experience in all analyses and am unaware of any other theory suggesting that these differences would interact with any of my independent variables. In addition, research has found internet and paper-based results to be similar (Birnbaum 2000). Cumulatively, these factors indicate that response mode does not threaten the construct validity of the *Specialization* measured variable.

multiple experience levels, were invited to participate online by two partners at Big 4 firms, two senior managers at large regional firms, and myself.[17] Eighty auditors completed the online materials resulting in an internet response rate of 21.6%. Ninety-one senior-level auditors participated during a firm training session. Thus, the final sample included 171 auditors with an average of 5.7 years of experience.[18] See Table 1 for demographic information about the sample. Audit seniors and more experienced auditors are appropriate participants as beginning at this level, auditors are responsible for performing preliminary analytical review procedures (Hirst and Koonce 1996).

4.2 Experimental Task

The experiment begins with background information including the client's internal control system, business objectives, key risks, and industry trends as recommended by Asare and Wright (2001) for analytical procedure research. I chose not seed a misstatement or include overt fraud risk factors to operationalize a well-concealed fraud.[19] A context devoid of fraud risk indicators is beneficial as it likely promotes automaticity and confidence in specialists' decision processing thereby allowing the strongest test of my theory by maximizing between-group variance. From a practical standpoint, regulators have made allegations of pervasive insufficient professional skepticism (PCAOB 2007). As auditors rarely encounter fraud (Ashton 1991), this setting represents the environment that auditors typically operate within. That is, we should clearly be concerned with conditions where fraud is not overtly indicated especially as 1) fraud is most likely to undetected when management goes to elaborate lengths to deceive (Bell et

[17] The auditors who sent out the recruiting emails required firm and auditor anonymity leaving me unable to test for firm effects. Controlling for firm size does not affect any of the results reported herein.

[18] Six (twenty-three) auditors started but did not complete the paper-based (internet) version of the experiment. The rate was not significantly different based on experimental condition (*ES* = 13.6%; *JS* = 20.5%; *Control* = 18.2%; χ^2_2 = 1.53; $p_{two\text{-}tailed}$ = 0.465).

[19] A partner specializing in insurance at a Big 4 accounting firm reviewed the case materials concluded them to be representative of practice and that there are no overt fraud risk indicators.

al. 2005) and 2) specialists have been shown to have some superiority in identifying partial cue patterns suggestive of fraud (Hammersley 2006).

Based on random assignment, participants then encounter one of the three levels of the *Skepticism Target* manipulation (wording to appear hereafter). Participants then read about an unexpected fluctuation in the unaudited deferred policy acquisition cost balance. Deferred policy acquisition costs relate to the acquisition of policies (e.g., agent commissions) and are capitalized and amortized over the policy's life. I chose this rather basic industry-specific account to promote automaticity and confidence in specialists' decision processing. Using a basic industry-specific account also increases the likelihood of non-specialists with limited insurance industry experience being familiar with the account. Therefore, I measure and control for non-specialists' insurance and closely-related industry experience.

The unexpected fluctuation is accompanied by a management-provided non-misstatement explanation (increase in commission rates) as typically occurs in practice (Hirst and Koonce 1996). Participants assess the probability that this explanation accounts for substantially all of the observed fluctuation. Next, participants generate potential explanations and assess the associated probabilities. The participants then separately assess the probabilities that unknown misstatement and non-misstatement explanations account for substantially all of the observed fluctuation followed by their risk assessments and assessment of judgment confidence. The experiment concludes with a post-experimental questionnaire including measurement of control variables and demographic questions.

4.3 Independent Variables

I consider auditors specializing in the insurance industry to be specialists and auditors specializing in other industries to be non-specialists while controlling for the latter's experience

auditing clients in insurance and closely related industries (Low 2004).[20] Although the vast majority of audits are currently being performed by specialists (Hammersley 2006), the inclusion of non-specialists is essential for testing my theory on how specialization and targets of professional skepticism jointly affect auditors' professional judgments.

For *Skepticism Target*, I manipulate the degree to which the engagement partner emphasized ES or JS. See Appendix A for the *ES* and *JS* manipulations. For *ES*, note the partner discusses how auditors often fail to exercise sufficient evidence skepticism and provided examples. For *JS*, the passage is identical to *ES* except that I change the partners' emphasis to judgment skepticism. This passage attacks confidence by discussing how experts in other fields tend to be overconfident and providing common expert errors.

In both of these conditions, I ask participants to recall an instance where they failed to exercise sufficient professional skepticism. They also answer two multiple-choice questions that both strengthen and verify attention to the manipulation. One question distinguishes either ES or JS from an accuracy goal to minimize defensive reactions (i.e., Kadous et al. 2003). The other question verifies their understanding of the linkage between either ES or JS and audit effectiveness. *Control* group participants do not read either passage, nor answer any questions, and simply proceed to the preliminary analytical review section of the experiment.

[20] Participants reported their industry specializations along with the percentage of their work year spent on insurance, other financial services, and clients in other industries. I identified 7 participants who spend a significant amount of time on insurance clients (>25%) but reported no or another industry specialization and 2 participants who spend very little time on insurance clients (<25%) but reported an insurance industry specialization. I reclassified these 9 participants in the results reported herein. Inferences are unchanged using their reported industry specialization or omitting these observations. I interviewed a Big 4 audit partner who stated that he would consider an auditor that spends over 25% of their time within an industry to be a specialist. This 25% cutoff also minimizes the number of reclassified participants.

4.4 Dependent Variables

Participants generate explanations for the unexpected ratio fluctuation and assign probabilities (using a 0 – 100 probability scale).[21] To test my hypotheses, I use three variables that represent professional judgments that reflect self-criticism: 1) the probability assigned to unknown misstatement explanations and 2-3) the number of and probability assigned to fraud explanations. These variables are consistent with 1) academics and regulators viewing attention to misstatement explanations as an indication of having exercised professional skepticism (AICPA 2003; Nelson 2009) and 2) professional skepticism being increasingly linked to prevention and detection of fraud (Bell et al. 2005). As supplemental analysis, I also measure the number of and probabilities assigned to error and non-misstatement explanations, probabilities assigned to unknown non-misstatement explanations, and aggregate risk assessments.[22]

In the absence of fraud risk indicators, generating fraud explanations is important for several reasons. One, explicit consideration of management fraud increases the justifiability of auditors' beliefs which is vital in the absence of a normative benchmark such as evaluating audit quality in the absence of an alleged misstatement (Bell et al. 2005). Two, fraud is most likely to go undetected when management goes to elaborate lengths to deceive (Bell et al. 2005). Three, medical research indicates the value of having a diagnostic hypothesis (e.g., fraud) in one's initial hypothesis set in terms of evidence gathering (e.g., identifying subsequent fraud risk

[21] A professor with six years of auditing experience and I (three years of auditing experience including numerous property and casualty insurance clients) coded, while blind to experimental conditions, the explanations as non-misstatement, fraud, or error explanations. Out of 465 total explanations, we agreed on 421 explanations resulting in an inter-rater agreement of 90.5% and a Cohen's Kappa of 0.901 ($p < 0.001$). We mutually resolved all differences.

[22] Professional standards typically describe professional skepticism in terms of fraud (e.g., see excerpt from SAS No. 99 in Chapter 2). Even if I consider attention to errors to be professional skepticism, my theory is less applicable as specialists likely consider high frequency errors irrespective of a prime (Owhoso, Messier and Lynch 2002).

indicators) and diagnostic performance (Barrows et al. 1982).[23] Four, generating fraud explanations can improve audit planning decisions (Hunton and Gold 2009).

4.5 Control Variables

My control variables relate to 1) other professional skepticism determinants to control for potential differences within the industry specialization measured variable and 2) auditor decision processing. With respect to Nelson's (2009) determinants, I control knowledge, audit-experience and training, and traits. For knowledge, I control non-specialists' insurance and closely related industry experience by adding the percent of their work year spent on property and casualty insurance, life and health insurance, and other financial services clients and multiplying the total by an industry specialization dummy variable set to 1 for non-specialists (*Specialization*). For audit experience and training, I measure the participants' years in the auditing profession. As material misstatements may be more likely or publicized within particular industries, I measure the perceived frequency of material misstatements within all participants' reported industry specialization. As a general confidence measure (i.e., outside of experimental task or a trait), I ask participants to assess their knowledge relative to auditors with the same rank within their industry specialization.

I measure and control for aspects of the participants' decision processes to assess whether *Skepticism Target* is operating consistent with the theory underlying the hypotheses. Four measures in this category are reported by all participants: 1) their judgment confidence (*Confidence*), 2) consideration of judgment fallibility (*Judgment Fallibility*), 3) consideration of overconfidence (*Overconfidence*), and 4) time spent on the task (*Time*).[24] I collect two other

[23] Using an ill-structured audit task allows me to make inferences about likely benefits in terms of justifiability (Bell et al. 2005) and downstream benefits (Barrows et al. 1982), but precludes me from making normative statements about improved performance or the reduction of bias.

[24] *Judgment Fallibility* and *Overconfidence* also serve as manipulation checks.

measures only in the two *Skepticism Target* conditions (*ES* and *JS*): 1) perception of *Skepticism Target* as an accuracy goal (*Accuracy*) and 2) the extent to which *Skepticism Target* made them defensive (*Defensive*). Finally, I control for the two modes of data collection using a dummy variable (*Internet*).

CHAPTER 5: RESULTS

5.1 Manipulation Checks

In both *Skepticism Target* conditions (*ES* and *JS*), participants describe an instance when they failed to exercise sufficient professional skepticism and answered two multiple choice questions (See Appendix A for these questions and Appendix B for sample responses to the open-ended question). 84.2% (86.8%) of the participants in the *ES* (*JS*) conditions provided written responses. 86.8% (87.5%) of the participants in the *ES* (*JS*) conditions answered both multiple choice questions correctly, indicating a successful *Skepticism Target* manipulation.[25]

Running ANCOVAs with the decision-processing variables as dependent variables also indicates a successful manipulation. Consistent with *JS* invoking more controlled processing in specialists than *ES*, *JS*-condition specialists spent significantly more time on the task (21.1 minutes) than *ES*-condition specialists (18.3 minutes; $F_{1,164} = 2.03$; $p_{one\text{-}tailed} = 0.073$). *JS*-condition auditors also significantly increase their consideration of judgment fallibility (*JS* = 6.35; *Control* = 5.84; $F_{1,164} = 2.73$; $p_{one\text{-}tailed} = 0.050$) and overconfidence (*JS* = 4.99; *Control* = 4.06; $F_{1,163} = 2.73$; $p_{one\text{-}tailed} = 0.033$). Meanwhile, *ES*-condition auditors do not significantly increase their consideration of judgment fallibility (*ES* = 6.08; $F_{1,164} = 0.87$; $p_{two\text{-}tailed} = 0.353$) or overconfidence (*ES* = 4.75; $F_{1,164} = 1.51$; $p_{two\text{-}tailed} = 0.222$) compared to *Control*-condition auditors.[26] Although these four contrasts provide evidence of a successful *JS* manipulation, in the development of my hypotheses, I discuss how the largest effect (compared to *Control*) on these

[25] Excluding the participants who did not provide a written response and/or incorrectly answered the manipulation check questions does not qualitatively change any of the reported results. The correct response rate for the multiple choice questions is statistically better than 50% in both the *ES* ($\chi^2 = 28.70$; $p < 0.001$) and *JS* ($\chi^2 = 27.00$; $p < 0.001$) conditions.

[26] *JS*-condition specialists report a significantly higher level of *Judgment Fallibility* and *Overconfidence* compared to *ES*-condition and *Control*-condition specialists (*Judgment Fallibility*: F= 2.44; $p_{one\text{-}tailed} = 0.060$; *Overconfidence*: F = 2.70; $p_{one\text{-}tailed} = 0.051$), but not when compared to only *ES*-condition specialists (*Judgment Fallibility*: F= 0.80; $p_{one\text{-}tailed} = 0.187$; *Overconfidence*: F = 0.67; $p_{one\text{-}tailed} = 0.208$). The lack of difference between ES and JS is likely to due to some *ES*-condition specialists perceiving their consideration of fraud (See H1 and H2 results) as judgment fallibility / overconfidence consideration, on a post test basis.

two variables would be for *JS*-condition specialists. To examine these differential effects, I used the following planned comparison:

$$3*(JS^{S} - Control^{S}) - 1/3*(ES^{S} - Control^{S} + JS^{NS} + ES^{NS} - 2*Control^{NS}) > 0 \quad (1)$$

This contrast is significant for *Judgment Fallibility* ($F_{1,163} = 2.079$; $p_{one\text{-}tailed} = 0.075$) but not *Overconfidence* ($F_{1,164} = 1.63$; $p_{one\text{-}tailed} = 0.101$).[27] As there were no differences in *Accuracy* or *Defensive*, the distinction between *ES* and *JS* primarily relates to time spent on the task (i.e., more controlled processing) and judgment fallibility consideration.[28]

5.2 Unknown Misstatement Explanations

For my first test of H1 and H2, I employ the probability that participants assigned to unknown misstatement explanations for the unexpected fluctuation in the DAC balance and ran an ANCOVA (Table 2).[29] Supporting H1, non-specialists assign a significantly higher probability to unknown misstatement explanations than specialists within the *Control* condition ($Control^{NS} = 1.04$; $Control^{S} = 0.76$; $F_{1,163} = 3.26$; $p_{one\text{-}tailed} = 0.036$). See Figure 4 Panels A and B for graphical representation of results.

To test my prediction in H2 that the increase (compared to *Control*) in the probability of unknown misstatement explanations would be highest for *JS*-condition specialists compared to the increases of *ES*-condition specialists, *ES*-condition non-specialists, and *JS*-condition non-specialists, I used the planned contrast (1) within the ANCOVA.

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[27] Throughout the remainder of this dissertation, superscripts of S(NS) refer to specialists (non-specialists).

[28] To further investigate the ES and JS distinction, a professor with two years of auditing experience and I (3 years of auditing experience) coded the open-ended responses as primarily ES or JS instances while blind to experimental conditions. Out of 94 total responses, 20 responses were too general to code resulting in 74 codable responses. We agreed on 61 explanations resulting in an inter-rater agreement of 82.4% and a Cohen's Kappa of 0.649 ($p < 0.001$). We mutually resolved all differences. The correct coding rate of 89.2% (66 out of 74) is statistically better than 50% ($\chi^2 = 45.46$; $p < 0.001$) indicating a successful manipulation between ES and JS.

[29] Participants separately reported the probabilities that the fluctuation was due to a) an unknown misstatement explanation, b) a combination of misstatement explanations, and c) a combination of misstatement and non-misstatement explanations. I use the sum of these three probabilities in the analysis reported herein. As categories b) and c) could be combinations of known and unknown explanations, I ran all analyses with only a) and a factor score (factor loadings: a): 0.788; b): 0.896; c) 0.643) and observe qualitatively similar results.

This contrast is significant ($F_{1,163}$ = 4.09; $p_{one\text{-}tailed}$ = 0.022) supporting H2.[30] I obtain further support for this interaction by comparing the simple main effects of each skepticism target to *Control*. *JS* significantly increases specialists' probability of unknown misstatement explanations compared to *Control* (JS^S = 1.25; $Control^S$ = 0.76; $F_{1,163}$ = 6.44; $p_{one\text{-}tailed}$ = 0.006), an increase of 66% in percentage terms. Similar contrasts compared to *Control* are insignificant for *ES*-condition specialists, *ES*-condition non-specialists, and *JS*-condition non-specialists (all $p_{two\text{-}tailed} > 0.10$). A contrast using weights of +2 (JS^S = 1.253), -1 (ES^S = 0.987), and -1 ($Control^S$ = 0.755) indicates that *JS*-condition specialists also assess a higher probability of unknown misstatement explanations compared to specialists in the other two conditions ($F_{1,163}$ = 4.83; $p_{one\text{-}tailed}$ = 0.015).[31] Cumulatively, H2 is supported with respect to unknown misstatements and consistent with only *JS*-condition specialists increasing the probability of unknown misstatement explanations as ES preferences do not alter specialists' automatic processing and non-specialists assign a relatively high level to unknown misstatement explanations irrespective of supervisor preferences.

5.3 Fraud Explanations

As a second test of H1 and H2, I measure the number and probability of fraud explanations that participants generated for the unexpected fluctuation in the DAC balance and ran a factor analysis. The results indicate that both of these variables load on the same factor as only one eigenvalue is greater than 1.0 (eigenvalue = 1.77). The factor loadings are presented in Table 3 Panel A. Using the factor scores as a dependent variable, I ran an ANCOVA (Table 3 Panel C). Supporting H1, non-specialists' *Fraud Factor Score* is significantly higher than

[30] A semi-omnibus test supports the assumption of equality of the differences compared to *Control* for *ES*-condition specialists, *ES*-condition non-specialists, and *JS*-condition non-specialists ($F_{1,163}$ = 0.85; $p_{two\text{-}tailed}$ = 0.349).

[31] The contrast of *ES*-condition and *JS*-condition specialists is insignificant (ES^S = 0.99; JS^S = 1.25; $F_{1,163}$ = 1.63; $p_{one\text{-}tailed}$ = 0.102), but is significant when removing the two covariates from the ANCOVA (F = 2.12; $p_{one\text{-}tailed}$ = 0.073).

specialists within the *Control* condition ($Control^{NS}$ = 0.03; $Control^{S}$ = -0.33; $F_{1,162}$ = 2.58; $p_{one\text{-}tailed}$ = 0.055). In fact, none of the 19 specialists in the *Control* condition generated a single fraud explanation. See Figure 4 Panels C and D for graphical representation of results.

To test my prediction in H2 that the increase (compared to *Control*) in fraud consideration would be highest for *JS*-condition specialists compared to the increases of *ES*-condition specialists, *ES*-condition non-specialists, and *JS*-condition non-specialists, I used the planned contrast (1) within the ANCOVA. This contrast is insignificant ($F_{1,162}$ = 1.30; $p_{one\text{-}tailed}$ = 0.128) failing to support H2.[32] The lack of support for this predicted interaction is clarified by comparing the simple main effects of each skepticism target to *Control*. Consistent with H2, *JS* significantly increases specialists' consideration of fraud compared to *Control* (JS^{S} = 0.14; $Control^{S}$ = -0.33; $F_{1,162}$ = 2.94; $p_{one\text{-}tailed}$ = 0.044). However, the significance of the interaction is dampened by a insignificant increase in *ES*-condition specialists' consideration of fraud (ES^{S} = 0.06; $Control^{S}$ = -0.33; $F_{1,162}$ = 2.36; $p_{two\text{-}tailed}$ = 0.126).[33] This result is consistent with skepticism being increasingly linked to fraud (Bell et al. 2005) and encouraging as ES preferences lead some highly confident specialists to consider fraud even when not indicated by the evidence.

The lack of support for H2 with respect to frauds is further clarified in a repeated measure ANCOVA using the raw data (i.e., number and probability of fraud explanations). Within this ANCOVA (Table 4), the H2 contrast is significant for the number of fraud explanations ($F_{1,162}$ = 2.05, $p_{one\text{-}tailed}$ = 0.077), but not the probability of fraud explanations ($F_{1,162}$ = 0.50; $p_{one\text{-}tailed}$ = 0.240). That is, *JS*-condition specialists are the most likely to increase consideration of fraud

[32] A semi-omnibus test supports the assumption of equality of the differences compared to *Control* of *JS*-condition non-specialists, *ES*-condition non-specialists, and *ES*-condition specialists ($F_{1,162}$ = 1.35; $p_{two\text{-}tailed}$ = 0.247).
[33] Consistent with H2 and non-specialists considering fraud irrespective of supervisor preferences due to self-critical controlled processing triggered by industry unfamiliarity, neither type of supervisor preference increased non-specialists' consideration of fraud (all $p_{two\text{-}tailed} > 0.10$).

explanations (compared to all other conditions), but not as likely to assign a high probability to these explanations.[34] In the absence of fraud risk indicators, this pattern of results is arguably appropriate as, by definition, fraud is unlikely to be present. Likewise, explicit consideration of fraud increases the justifiability of auditors' beliefs. It may also have benefits in audit planning (Hunton and Gold 2009) and execution such as superior identification of subsequently encountered fraud risk indicators. With respect to fraud, H2 is partially supported with the results being stronger for the number than the probability of fraud explanations.

5.4 Supplemental Analysis

Further support for my framework and insight is gained through four supplemental analyses. First, I examine other determinants of self-critical professional judgments. Second, I use a mediation analysis to provide evidence that my dependent variables are capturing self-criticism. Third, I assess the quality of fraud explanations. Fourth, I analyze participants' other professional judgments.

5.4.1 Other Determinants of Self-Critical Professional Judgments

Collectively, the significant covariates identify other factors associated with self-critical professional judgments and lend further empirical support to my integrated framework. Not surprisingly, participants' perceived frequency of misstatements within their industry specialization (*Misstatement Sensitivity*) is positively associated with the probability of unknown misstatement explanations ($p_{two\text{-}tailed} = 0.023$). Non-specialists' insurance and closely-related industry experience is negatively associated with unknown misstatement explanations ($p_{two\text{-}tailed} =$

[34] An alternative explanation for these results is that specialists have a larger repository of potential explanations than non-specialists. Thus, non-specialists could increase self-criticism just as much as specialists, but the increase would not be evident in their generation of fraud explanations. This explanation is unlikely for three reasons. First, see Section 5.1 where I document that *JS*-condition specialists exhibit the largest increase in *Judgment Fallibility*. Second, non-specialists did not increase *Judgment Fallibility* or *Overconfidence* nor devote more time to task in response to either *ES* or *JS* primes (all $p_{two\text{-}tailed} > 0.10$). Third, I examine fraud explanations as a percentage of total explanations and find that the increase in this measure of self-criticism is largest for *JS*-condition specialists ($F = 2.12$; $p_{one\text{-}tailed} = 0.074$) suggesting that these specialists did not simply draw on a larger repository of explanations.

0.041) consistent my integrated framework where proximity to an industry elevates automaticity and confidence thereby decreasing the likelihood that auditors are self-critical.

Consistent with my integrated framework, judgment fallibility consideration (*Judgment Fallibility*) is positively associated with fraud explanations ($p_{two\text{-}tailed} = 0.047$). Yet, unexpectedly, consideration of overconfidence (*Overconfidence*) is negatively associated with skepticism in terms of fraud explanations ($p_{two\text{-}tailed} = 0.001$). To further investigate this result, I calculated bivariate correlations of *Overconfidence* and *Fraud Factor Score* in each of the 6 experimental conditions. The negative association is only significant for non-specialists in the *ES* and *JS* conditions. As will be discussed below, non-specialists increase the probability of error explanations in response to both evidence skepticism and judgment skepticism preferences which appears to inhibit their consideration of well-concealed fraud.[35] In the next section, I further investigate an unexpected finding, the lack of association between *Judgment Fallibility* and *Unknown Misstatements.*

5.4.2 Mediation Analysis

To provide further support for my theory that increased self-criticism (primed by judgment skepticism preferences) will lead specialists to increase the probability of unknown misstatement explanations, I employ a Baron and Kenny (1986) mediation analysis. As my theory suggests that judgment skepticism preferences will only increase judgment fallibility consideration (i.e., self-criticism) for *JS*-condition specialists, I conduct the mediation analysis with only the *Control*-condition and *JS*-condition specialists' data. Within this small sample (n =

[35] The only other significant covariate in Tables 2-3 is *Internet* ($p_{two\text{-}tailed} = 0.023$) being positively associated with fraud consideration. There is a reasonable effort-based explanation. Recall that internet respondents devoted more effort to the task (see footnote 16). If participants devote more cognitive effort to generating explanations, more fraud explanations are likely to be generated. Of course, there are a host of other possibilities that could explain these results. As I did not observe any significant interactions between *Internet* and my primary independent variables (*Specialization* and *Skepticism Target*), including *Internet* as a covariate properly controls for the effect.

38), I fail to observe a significant correlation between *Judgment Fallibility* and *Unknown Misstatements* ($p_{one\text{-}tailed} = 0.133$). Therefore, as a noise reduction technique, I summed all of the participant's probabilities (misstatement and non-misstatement) and forced additivity to 100%.[36] This transformed variable *Unknown Misstatements* ^{FA} is significantly associated with the *JS* manipulation ($p_{one\text{-}tailed} = 0.011$), satisfying the first test. The *JS* manipulation is also positively associated with the mediator (*Judgment Fallibility*) satisfying Step 2 ($p_{one\text{-}tailed} = 0.057$). The data satisfies the third step as *Judgment Fallibility* is positively correlated with *Unknown Misstatements* ^{FA} ($p_{one\text{-}tailed} = 0.031$). However, when controlling for *Judgment Fallibility,* the *JS* manipulation is still associated with *Unknown Misstatements* ^{FA} ($p_{one\text{-}tailed} = 0.023$) indicating partial mediation (Baron and Kenny 1986). Partial mediation supports my theory that judgment skepticism preferences increase specialists' consideration of unknown misstatement explanations by fostering self-criticism. However, judgment skepticism preferences also increase consideration of unknown misstatements in other ways. Future research could identify other features of judgment skepticism preferences that increase such consideration.

5.4.3 Quality of Fraud Explanations

In this section, I examine qualitative differences between specialists' and non-specialists' fraud explanations. Due to industry knowledge, it is likely that specialists' fraud explanations incorporate more contextual industry-specific information making them better able to design appropriate audit tests. An auditing professor with three years of auditing experience and I assigned context scores to the fraud explanations, while blind to the experimental conditions,

[36] This transformation reduces noise by eliminating differences due to various interpretations of the probability scales. All reported results are qualitatively unchanged using forced additivity measures. An FA superscript denotes a forced additivity measure.

using a 3 point scale (1 = devoid of context, 2 = some context, 3 = rich context).[37] The specialists' fraud explanations (*Fraud Context Score* = 2.57) incorporated significantly more context than those of non-specialists (*Fraud Context Score* = 1.45; $t_{25} = 4.34$; $p_{two\text{-}tailed} < 0.001$). As no *Control*-condition specialists generated a single fraud explanation, this result demonstrates the importance of promoting judgment skepticism in specialists as they appear well-equipped to consider potential frauds due to their industry knowledge.

5.4.4 Other Professional Judgments

My hypothesis testing employed two professional judgments that reflect self-criticism in the absence of fraud risk indicators: unknown misstatements and fraud explanations. In this section, I analyze participants' other professional judgments: error explanations, non-misstatement explanations, and aggregate risk assessments.

To examine the effects of *ES* and *JS* on error explanations, I ran a repeated measures ANCOVA (Table 5) with the number and probability of generated error explanations as dependent variables. Due to industry experience, specialists likely actively consider high frequency errors irrespective of supervisor preferences (Owhoso et al. 2002). Accordingly, neither *ES* nor *JS* affect specialists' number or probability of generated error explanations. Likewise, non-specialists likely actively consider errors due to conservatism associated with controlled processing triggered by industry unfamiliarity. Although neither *ES* nor *JS* affect non-specialists' number of generated error explanations, *ES* led to an increase in non-specialists' probability of generated error explanations (*ES* = 0.16; *Control* = 0.06; $F_{1,162} = 5.40$; $p_{two\text{-}tailed} = 0.021$). A post hoc explanation for this pattern of results is that non-specialists could not

[37] We initially agreed on 23 out of 27 fraud explanations resulting in an inter-rater agreement of 85.2% and a Cohen's Kappa of 0.773 ($p < 0.001$). We mutually resolved all differences.

generate additional error explanations in response to evidence skepticism preferences, but viewed the preferences as diagnostic of increased risk of erroneous assertions.

Consistent with academics and regulators viewing professional skepticism as attention to misstatement explanations (AICPA 2003; Nelson 2009), my results are generally consistent with *ES* and *JS* not affecting the number or probabilities of non-misstatement explanations with a notable exception.[38] Consistent with *JS* activating unknown explanations in working memory, such preferences led to a decrease in the probability of unknown non-misstatement explanations in non-specialists (*JS* = 0.84; *Control* = 1.02; $F_{1,163} = 3.42$; $p_{two\text{-}tailed} = 0.066$). Non-specialists likely realize they are limited with respect to non-misstatement knowledge and, thus, view JS preferences as diagnostic of increased risk of misstatement and indicating that unknown non-misstatement explanations are less probable.

My integrated framework does not make clear predictions on the extent to which changes in self-critical professional judgments will be impounded into aggregate risk assessments.[39] That is, increased self-criticism does not necessarily nor normatively lead to a perception of increased risk of misstatement especially considering the lack of a normative benchmark (i.e., higher risk assessments are not necessarily better). For participants' risk assessments (*RMM*), none of the simple main effects of *ES* or *JS* versus *Control* are significant (all $p_{two\text{-}tailed} > 0.10$) for either specialists or non-specialists. Even though *ES* increased non-specialists' probability of error explanations for non-specialists, the lack of results on *RMM* is not particularly surprising due to non-specialists typically being conservative in their risk assessments (Taylor 2000).

[38] To examine the effects on non-misstatement explanations, I ran a repeated measure ANCOVA (Table 6) with the four non-misstatement measures (number and probabilities of self-generated non-misstatement explanations and the probabilities of the management-provided explanation and unknown non-misstatement explanations). Consistent with prior studies (Solomon et al. 1999), I observe a significant main effect of *Specialization* ($p = 0.012$). All simple main effects of *ES* or *JS* versus *Control* are insignificant (all $p_{two\text{-}tailed} > 0.10$) unless otherwise noted.

[39] To examine the effects on risk assessments, I ran an ANCOVA (Table 7) with the participants' aggregate risk assessment as the dependent variable. Consistent with non-specialists' conservative risk assessments in prior studies (Taylor 2000), I observe a significant main effect of *Specialization* ($p = 0.026$).

On the other hand, *JS*-condition specialists generated more fraud explanations and increased the probability of unknown misstatement explanations, but do not seem to impound the elevated self-criticism into their aggregate risk assessments. For fraud explanations, the lack of increased risk assessments is not surprising as *JS*-condition specialists did not assign a significantly higher probability to fraud explanations. Another possibility is that increased fraud consideration reduces the extent to which error explanations are impounded into risk assessments. As for the increased probability of unknown misstatements, *JS*-condition specialists may have difficulty aggregating what they do not know into risk assessments. Then again, in the absence of fraud risk indicators, considering unknown misstatements and fraud explanations, but not increasing risk assessments may actually be appropriate from an audit efficiency standpoint. Although *JS*-condition specialists do not increase their risk assessments, there could still be considerable effects on audit planning and execution as the level of risk assessments are only one of many inputs (e.g., source of risk) into these decisions. Future research that examines the relationship amongst self-critical professional judgments, risk assessments, and audit planning and execution would be beneficial.

CHAPTER 6: CONCLUSION

In this dissertation, I integrate dual-processing theory (Smith and DeCoster 2000; Evans 2008) into Nelson's (2009) model of professional skepticism. The resulting integrated framework illustrates the critical role that the *target* of auditors' skepticism – audit evidence or their own judgment and decision making – has on their professional judgments and how this role depends on other factors. I then use my integrated framework to predict that industry specialization interacts with the target of professional skepticism in influencing professional judgments. When working inside their specialization, auditors make more automatic, intuitive judgments. As such, specialization leads to proficiency in evidence evaluation, but, in the absence of fraud risk indicators, inhibits self-critical thinking. Thus, priming specialists to be skeptical of evidence has little to no effect on their judgments. However, priming them to be skeptical of their judgment and decision making leads specialists to worry about what they do and do not know in an epistemological sense.

My experimental results largely support my predictions. Unprimed, specialists are less concerned than non-specialists about what they do not know. The most striking evidence was that none of 19 specialists in the control-condition generated a single fraud explanation. Yet, when primed to be skeptical of their judgment and decision making, specialists began to worry about unknown misstatements and well-concealed fraud. In fact, the largest increase (compared to unprimed professional judgments) in the number of fraud explanations and the probability of unknown misstatements occurs for *JS*-condition specialists compared to the increases of *ES*-condition specialists, *ES*-condition non-specialists, and *JS*-condition non-specialists. These results demonstrate that exercising judgment skepticism makes specialists not only experts in the

evaluating evidence, but also self-critical and circumspect about management fraud even when fraud is not overtly indicated by the evidence thereby increasing the justifiability of their beliefs.

This dissertation is subject to several limitations in addition to those typically associated with experimental research. One, I only captured professional judgments within preliminary analytical review and within one industry. However, I am unaware of any theory that would suggest that auditors' decision processes are fundamentally different with respect to other audit judgment tasks or different industries. Two, my tests do not provide evidence on whether or not exercising judgment skepticism also leads specialists to question the informativeness of audit evidence (cf. Brown et al. 1999) as a result of increased self-criticism. Three, auditors may become sensitized to judgment skepticism with its benefits weakening over time. Four, just because I observed theory-consistent increases in specialists' self-critical professional judgments does not mean there are not boundary conditions on the effectiveness of judgment skepticism preferences. As there is considerable evidence that experts are overconfident in their judgments (e.g., Fischhoff et al. 1988; Zacharias and Shepherd 2001; Malmendier and Tate 2005), specialists may, under certain conditions, resist judgment skepticism preferences viewing self-criticism as unnecessary or even become defensive as the preferences threaten their expertise. Five, Bell et al. (2005) recommend that auditors should use judgment skepticism as a complement to evidence skepticism. A hybrid preference that strongly emphasizes both types of skepticism may be optimal in terms of self-critical professional judgments. Six, I purposely employed an ill-structured audit task which does allow me to make some inferences about likely benefits in terms of justifiability, but precludes me from making normative statements about the reduction of auditor bias. Future research could identify audit tasks with unambiguous

normative benchmarks and examine the efficacy of judgment skepticism as a debiaser (cf. Grenier, Peecher and Piercey 2009).

This dissertation suggests several other directions for future research. Researchers could examine how the target of auditors' professional skepticism interacts with other auditor, task, or environmental factors in producing self-critical professional judgments. For example, one could examine institutional features of auditing firms such as supervision and review that moderate the extent to which specialists are self-critical. Researchers might also consider how different levels and types of audit risks, different judgment tasks with varying levels of complexity, and heterogeneous audit teams (i.e., specialists and non-specialists; Beck and Wu 2007) potentially moderate the inferences drawn in this study. My integrate framework will help researchers predict the effects of these and other factors on professional judgments. It would also be beneficial to examine how evaluators of auditors (e.g., regulators, jurors) view industry specialists' documented self-critical professional judgments. Finally, future research could model how professional judgments affect risk assessments and the planning and execution of the audit.

REFERENCES

AICPA. 2002. Consideration of fraud in a financial statement audit. In *Statement of Auditing Standards No. 99*. New York, NY, AICPA.

---. 2003. *AICPA Practice Aid Series, Fraud Detection in a GAAS Audit: SAS No. 99 Implementation Guide*. New York, NY, AICPA.

Anderson, J. R. 1983. *The Architecture of Cognition*. Cambridge, MA:. Harvard University Press.

---. 1987. Skill acquisition: Compilation of weak-method problem solutions. *Psychological Review* 94: 192 - 210.

---. 1992. Automaticity and the ACT theory. *The American Journal of Psychology* 105(2): 165-180.

Asare, S. K. and A. Wright. 1997. Hypothesis revision strategies in conducting analytical procedures. *Accounting, Organizations and Society* 22(8): 737 - 756.

---. 2001. Design considerations for research on analytical procedures. *International Journal of Auditing* 5: 205 - 214.

Ashton, A. H. 1991. Experience and Error Frequency Knowledge as Potential Determinants of Audit Expertise. *The Accounting Review* 66(2): 218 - 239.

Bargh, J. A. 1989. Conditional automaticity: Varieties of automatic influence in social perception. In *Unintended Thought*. J. S. Uleman and J. A. Bargh. New York, Guilford Press**:** 3 - 51.

Bargh, J. A. and T. L. Chartrand. 1999. The unbearable automaticity of being. *American Psychologist* 54(7): 462 - 479.

Bargh, J. A., P. M. Gollwitzer, A. Lee-Chai, K. Barndollar and R. Troetschel. 2001. The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology* 81(6): 1014 - 1027.

Baron, R.M. and D.A. Kenny. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51(6): 1173 - 1182.

Barrows, H. S., G. R. Norman, V. R. Neufeld, and J.W. Feightner. 1982. The clinical reasoning of randomly selected physicians in general medicine practice. *Clinical and Investigative Medicine* 5: 49-55.

Beasley, M. S., J. V. Carcello and D. R. Hermanson. 2001. Top 10 audit deficiencies. *Journal of Accountancy* 191(4): 63 - 66.

Beck, P. J. and M. G. H. Wu. 2007. The impact of judgment enhancement strategies on audit quality and firm risk when clients have correlated business risks. *Working Paper - University of Illinois at Urbana-Champaign*.

Bedard, J. C. and S. F. Biggs. 1991. Pattern Recognition, Hypotheses Generation, and Auditor Performance in an Analytical Task. *The Accounting Review* 66(3): 622 - 642.

Bell, T. B., M. E. Peecher and I. Solomon. 2005. *The 21st Century Public Company Audit: Conceptual Elements of KPMG's Global Audit Methodology*. U.S.A., KPMG International.

Birnbaum, M.H. 2000. *Psychological Experiments on the Internet*. San Diego, CA, Academic Press.

Bonner, S. E., and B. L. Lewis. 1990. Determinants of auditor expertise. *Journal of Accounting Research* 28 (Supplement): 1-20.

Brewster, B.E. 2009. Enhancing auditor expertise: Examining how a reinforcing feedback loop between knowledge and ability affects task performance. *Doctoral Dissertation - University of Illinois.*

Brown, C. E., M. E. Peecher and I. Solomon. 1999. Auditors' hypothesis testing in diagnostic inference tasks. *Journal of Accounting Research* 37(1): 1-26.

Burton, R. A. 2008. *On being certain: Believing you are right even when you're not*. New York, NY, St. Martin's Press.

Carmichael, D. R. and J. L. Craig. 1996. Proposal to say the "F" word in auditing standards. *The CPA Journal* 66(6): 22 - 28.

Campbell, S. and M. Hughes. 2005. Foreward. In *The 21st Century Public Company Audit: Conceptual Elements of KPMG's Global Audit Methodology*. Bell, T. B., M. E. Peecher and I. Solomon. U.S.A., KPMG International. p. i-ii.

Carpenter, T. and J. L. Reimers. 2009. The Effect of a Partner's Emphasis on Professional Skepticism on Auditors' Fraud Judgments. *Working Paper - SSRN #1068942*.

Chartrand, T. L. and J. A. Bargh. 1996. Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions. *Journal of Personality and Social Psychology* 71(3): 464 - 478.

Chen S. and S. Chaiken. 1999. The heuristic-systematic model in its broader context. In *Dual Process Theories in Social Psychology*, ed. Chaiken S., Trope Y. pp. 73-96. New York: The Guildford Press.

Clark, A. 1997. *Being there: Putting brain, body, and world together again*. Cambridge, MA, MIT Press.

Deelstra, J. T., M. C. W. Peeters, W. B. Schaufeli, W. Stroebe, F. R. H. Zijlstra and L. P. v. Doornen. 2003. Receiving instrumental support at work: When help is not welcome. *Journal of Applied Psychology* 88(2): 324 - 331.

Elliott, R., R. Dolan, and C. Frith. 2000. Dissociable functions in the medial and lateral orbitofrontal cortex: Evidence from human neuroimaging studies. *Cerebral Cortex* 10(3): 308-317.

Ellsberg, D. 1961. Risk, Ambiguity, and the savage axioms. *Quarterly Journal of Economics* 75(November): 643 - 669.

Epstein S. 1994. Integration of the cognitive and psychodynamic unconscious. American Psychologist 49:709-724.

Epstein, S., A. Lipson, C. Holstein and E. Huh. 1992. Irrational reactions to negative outcomes: Evidence for two conceptual systems. *Journal of Personality and Social Psychology* 62(2): 328 - 339.

Evans, J.S.B.T. 2008. Dual-processing accounts of reasoning, judgment and social cognition. *Annual Review of Psychology* 59: 255–278.

Fischhoff, B., P. Slovic and S. Lichtenstein. 1988. Knowing with certainty: The appropriateness of extreme confidence. In *Judgement and Decision Making: An Interdisciplinary Reader*. H. R. Arkes and K. R. Hammond. New York, Cambridge University Press**:** 397 - 416.

Fisher, J. D., A. Nadler and S. Whitcher-Alagna. 1982. Recipient reaction to aid. *Psychological Bulletin* 91: 27 - 54.

Fiske, S. T. 1998. Stereotyping, Prejudice, and Discrimination. In *The Handbook of Social Psychology*. D. T. Gilbert, S. T. Fiske and G. Lindzey. Burr Ridge, McGraw Hill. 2**:** 357 - 414.

Frisch, D. and J. Baron. 1988. Ambiguity and Rationality. *Journal of Behavioral Decision Making* 1(Spring): 149-157.

Gibbins, M. and J.D. Newton. 1994. An empirical exploration of complex accountability in public accounting. *Journal of Accounting Research* 32(2): 165-186.

Gilbert, D. T., D. S. Krull and P. S. Malone. 1990. Unbelieving the unbelievable: Some problems in the rejection of false information. *Journal of Personality and Social Psychology* 59(4): 601 - 613.

Gilbert, D. T., D. S. Krull and B. W. Pelham. 1988a. Of thoughts unspoken: Social inference and the self-regulation of behavior. *Journal of Personality and Social Psychology* 55(5): 685 - 694.

Gilbert, D. T., B. W. Pelham and D. S. Krull. 1988b. On cognitive busyness: When person perceivers meet persons perceived. *Journal of Personality and Social Psychology* 54(5): 733 - 740.

Glover, S. M., D. F. Prawitt and T. J. Wilks. 2005. Why Do Auditors Over-Rely on Weak Analytical Procedures? The Role of Outcome and Precision. *Auditing* 24: 197 - 220.

Gobet, F. and H. A. Simon. 1996. Recall of random and distorted chess positions: Implications for the theory of expertise. *Memory and Cognition* 24(4): 493 - 503.

Grenier, J.H., M.E. Peecher, and M.D. Piercey. 2009. Judging auditor negligence: Debiasing interventions, outcome bias, and reverse outcome bias. *Working Paper - University of Illinois*.

Hackenbrack, K. and M. W. Nelson. 1996. Auditors' incentives and their application of financial accounting standards. *The Accounting Review* 71(1): 43 - 59.

Hammersley, J. S. 2006. Pattern Identification and Industry-Specialist Auditors. *The Accounting Review* 81(2): 309 - 336.

Hirst, D. E. and L. Koonce. 1996. Audit analytical procedures: A field investigation. *Contemporary Accounting Research* 13(2): 457 - 486.

Hunton, J.E. and A. Gold. 2009. A field experiment comparing the outcomes of three fraud brainstorming procedures: Nominal group, round robin and open discussion. *Forthcoming - The Accounting Review*.

Hurtt, R. K. 2009. Development of a Scale to Measure Professional Skepticism. *Forthcoming - Auditing: A Journal of Practice and Theory*.

IFAC. 2009. *Handbook of International Auditing, Assurance and Ethics Pronouncements*. www.ifac.org.

Johnson, P. E., K. Jamal and R. G. Berryman. 1991. Effects of Framing on Auditor Decisions. *Organizational Behavior and Human Decision Processes* 50(1): 75 - 105.

Johnstone, K. M., J. C. Bedard, and S. F. Biggs. 2002. Aggressive client reporting: factors affecting auditors' generation of financial reporting alternatives. *Auditing: A Journal of Practice & Theory* 21(1): 47-65.

Jones, J., D. W. Massey, and L. Thorne. 2003. Auditors' ethical reasoning: Insights from past research and implications for the future. *Journal of Accounting Literature* 22: 45-103.

Kadous, K., S. J. Kennedy and M. E. Peecher. 2003. The effect of quality assessment and directional goal commitment on auditors' acceptance of client-preferred accounting methods. *The Accounting Review* 78(3): 759 - 778.

Kennedy, J. 1995. Debiasing the curse of knowledge in audit judgment. *The Accounting Review* 70(2): 249 - 273.

Kinney, W.R. 2000. Economic analysis of skepticism in an audit setting: Discussion. In *Proceeding of the 14th Symposium on Auditing Research*. Urbana, IL - University of Illinois.

Klayman, J., J.B. Soll, C. Gonzalez-Vallejo, and S. Barlas. 1999. Overconfidence: It depends on how, what, and whom you ask. *Organizational Behavior and Human Decision Processes* 79(3): 216-247.

Koonce, L. 1992. Explanation and counterexplanation in audit analytical review. *The Accounting Review*, 67 (1): 59-76.

Kruger, J. and D. Dunning. Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology* 77(6): 1121-1134.

Kunda, Z. 1990. The case for motivated reasoning. *Psychological Bulletin* 108: 480 - 498.

LeDoux, J., L. Romanski, and A. Xagoraris. 1991. Indelibility of subcortical emotional memories. *Journal of Cognitive Neuroscience* 1: 238-243.

Libby, R. 1995. The role of knowledge and memory in audit judgment. In *Judgment and Decision Making Research in Accounting and Auditing*. R. H. Ashton and A. H. Ashton. Cambridge, MA, Cambridge University Press.

Libby, R. and J. Luft. 1993. Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society* 18: 425-450.

Logan, G.D. 1988. Towards an instance theory of automatization. *Psychological Review* 95: 492-527.

Low, K.-Y. 2004. The Effects of Industry Specialization on Audit Risk Assessments and Audit-Planning Decisions. *The Accounting Review* 79(1): 201 - 219.

Malmendier, U. and G. Tate. 2005. CEO overconfidence and corporate overinvestment. *The Journal of Finance* LX(6): 2661-2700.

McMillan, J. J. and R. A. White. 1993. Auditors' belief revisions and evidence search: The effect of hypothesis frame, confirmation bias, and professional skepticism. *The Accounting Review* 68(3): 443-465.

Moore, D. A. and G. Loewenstein. 2004. Self-interest, automaticity, and the psychology of conflict of interest. *Social Justice Research* 17(2): 189 - 202.

Most, S. B., D. J. Simons, B. J. Scholl, R. Jimenez, E. Clifford and C. F. Chabris. 2001. How not to be seen: The contribution of similarity and selective ignoring to sustained inattentional blindness. *Psychological Science* 12(1): 9 - 17.

Nadler, A. and J. D. Fisher. 1986. The role of threat to self-esteem and perceived control in recipient reaction to help: Theory development and empirical validation. In *Advances in Experimental Social Psychology*. L. Berkowitz. San Diego, CA, Academic Press. 19**:** 81 - 122.

Nelson, M. W. 2009. A Model and Literature Review of Professional Skepticism in Auditing. *Forthcoming - Auditing: A Journal of Practice and Theory*.

Owhoso, V. E., W. F. Messier, and J. G. Lynch. 2002. Error detection by industry-specialized teams during sequential audit review. *Journal of Accounting Research* 40 (Fall): 883-900.

PCAOB. 2007. Observations of Auditors' Implementation of PCAOB Standards Relating to Auditors' Responsibilities with Respect to Fraud. Release No. 2007-01, January 22, 2007. Washington, DC: PCAOB.

Peecher, M. 1996. The influence of auditors' justification processes on their decisions: A cognitive model and experimental evidence. *Journal of Accounting Research* 34(1): 125 - 141.

Pyszczynski, T. and J. Greenberg. 1987. Toward an integration of cognitive and motivational perspectives on social inference: A biased hypothesis-testing model. In *Advances in Experimental Social Psychology*. L. Berkowitz. New York, Academic Press. 20**:** 297 - 340.

Quadackers, L., T. Groot and A. Wright. 2008. Auditors' skeptical characteristics and their relationship to skeptical judgments and decisions. *Working Paper - VU University Amsterdam*.

Salterio, S. and L. Koonce. 1997. The persuasiveness of audit evidence: The case of accounting policy decisions. *Accounting, Organizations and Society* 22(6): 573 - 587.

Schneider, W. and R. M. Shiffrin. 1977. Controlled and automatic human information processing: Detection, search, and attention. *Psychological Review* 84(1): 1 - 66.

Shaub, M. K. and J. E. Lawrence. 1996. Ethics, experience and professional skepticism: A situational analysis. *Behavioral Research in Accounting* 8 (Supplement): 124-157.

Shiv, B. and A. Fedorikhin. 1999. Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. Journal of Consumer Research 26(3): 278-292.

Sloman, S.A.. 1996. The empirical case for two systems of reasoning. *Psychological Bulletin* 119: 3-22.

Smith, E. R. and J. DeCoster. 2000. Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality and Social Psychology Review* 4(2): 108 - 131.

Smith, J. F. and T. Kida. 1991. Heuristics and Biases: Expertise and Task Realism in Auditing. *Psychological Bulletin* 109(3): 472 - 489.

Solomon, I., M. D. Shields and O. R. Whittington. 1999. What do industry-specialist auditors know? *Journal of Accounting Research* 37(1): 191 - 208.

Swann, W. and I. Giuliano. 1987. Confirmatory search strategies in socials interaction: How, when, why, and with what consequences? *Journal of Social and Clinical Psychology* 5: 511 - 524.

Taylor, M. H. 2000. The effects of industry specialization on auditors' inherent risk assessments and confidence judgements. *Contemporary Accounting Research* 17(4): 693 - 712.

Tetlock, P. E. 1983a. Accountability and complexity of thought. *Journal of Personality and Social Psychology* 45: 74 - 83.

---. 1983b. Accountability and the perseverance of first impressions. *Social Psychology Quarterly* 46: 285 - 292.

Tetlock, P. E., L. Skitka and R. Boettger. 1989. Social and cognitive strategies for coping with accountability: Conformity, complexity, and bolstering. *Journal of Personality and Social Psychology* 57(4): 632 - 640.

Thomas, R.P., M.R. Dougherty, A. M. Sprenger, and J.I. Harbison. 2008. Diagnostic hypothesis generation and human judgment. *Psychological Review* 115(1): 155 – 185.

Trotman, K. 2006. Professional judgment: Are auditors being held to a higher standard than other professionals? *The Institute of Chartered Accountants in Australia*.

Wright, S. and A. M. Wright. 1997. The effect of industry experience on hypothesis generation and audit planning decisions. *Behavioral Research in Accounting* 9: 273 - 294.

Zacharakis, A.L. and D.A. Shepherd. 2001. The nature of information and overconfidence on venture capitalists' decision making. *Journal of Business Venturing* 16: 311-332.

APPENDIX A: EXPERIMENTAL MATERIALS

Participant Number _____

INTRODUCTION

You are about to perform a preliminary analytical review exercise. Please do not discuss any details of this exercise with others during the exercise or after completion.

BACKGROUND

You will be performing a preliminary analytical review on the Premier Property and Casualty (PPC) audit engagement. Founded in 1908 and based in Los Angeles, California, PPC is a medium-sized insurance company, with over 15,000 insured personal and commercial clients and over $130 million in premium revenue in 2006. PPC is a publicly traded small cap stock listed on NASDAQ. PPC is a longstanding and highly regarded client of your firm (48 years).

PPC provides commercial and personal automobile insurance policies with each of these lines operating in niche markets. PPC sells commercial policies to businesses that maintain a fleet of vehicles such as shipping and trucking companies, rental car companies, hospitals, and large universities. These policies comprise approximately 65% of premium revenue. PPC sells personal policies to individuals looking to insure high-end, luxury vehicles (MSRP > $40,000). Personal policies comprise approximately 35% of premium revenue.

STRATEGY AND PRODUCTS

PPC's long history in serving these niche markets helps the company sustain its competitive advantage of providing unparalleled customer service. This outstanding customer service spans all facets of insurance from offering customized policies to 24 hour rapid response claims service. PPC takes pride in its longstanding relationships with its clients and takes every effort to keep them satisfied. Consistent with the success of this strategy, the average commercial (personal) client has been with PPC for 15 (12) years with several clients having insured their vehicles with PPC for a much longer period.

Due to its relatively small client base (compared to larger insurers), PPC underwriters are able to develop an in-depth understanding of their commercial clients' operations. This understanding not only allows them to effectively price these policies, but also puts PPC in a better position to meet all of the client's needs through customized group insurance policies. For example, besides traditional customizations such as deductibles and limits, PPC incorporates unusual covered losses and discounts unique to the client's operations. PPC commercial agents are compensated not only for new policies, but also received large commissions for policy renewals. This system motivates agents to keep close contacts with their clients and ensure their satisfaction with PPC.

Similar to commercial policies, PPC offers its personal policy clients significant customization options. As most clients are very wealthy and own multiple expensive vehicles, extremely high deductibles and limits are common customizations along with discounts for multiple and limited use vehicles. Consistent with its strategy, PPC's claims service for personal policies is designed to maximize customer satisfaction. For example, PPC guarantees to personally deliver a

comparable loaner vehicle within two hours of an automobile accident and takes care of obtaining all repair estimates.

PPC's agents specifically target individuals who own several of these vehicles (e.g., movie and sports stars, other celebrities, etc.). As with commercial policies, PPC personal agents are paid commissions for both new policies and renewals. PPC also has long standing relationships with several high-end automobile dealerships and pays referral bonuses to dealers who refer new customers to PPC.

RISKS, INDUSTRY TRENDS, AND CONTROL ENVIRONMENT

As with all insurance companies, interest rate risk is a major factor due to large investment portfolios and reliance on investment income for profitability. The industry is also heavily regulated by state insurance departments that, among other things, cap the amount of premium that the company can charge and collects premium taxes. The automobile insurance market has intense price competition. Yet, the company operates in niche markets with a competitive advantage based on customer service allowing them to charge a slightly higher (but still reasonable and affordable) premium rate.

In its annual report, PPC stresses that it takes its reputation for honesty and integrity seriously. PPC management has a long standing commitment to internal controls, forthcoming disclosure, and financial reporting transparency. Historically, the working relationship of your audit firm with PPC management has been very cooperative.

Key business processes include 1) the underwriting of premium, 2) verifying and paying claims, 3) attracting new business, and 4) investing. The firm believes PPC has sound controls over all of these processes. Last year, the firm issued an unqualified SOX 404 auditor's report and an unqualified opinion on the financial statements.

PARTNER INSTRUCTIONS
EVIDENCE SKEPTICISM CONDITION

Recent professional standards and the PCAOB stress the exercising of professional skepticism to prevent and detect fraud. The engagement partner is concerned that our auditors sometimes might not exercise sufficient professional skepticism. Specifically, the engagement partner is concerned that our auditors sometimes fail to approach management-provided explanations and other audit evidence with sufficient professional skepticism. This concern is based on evidence that auditors across a variety of engagements do not actively question management assertions or critically assess audit evidence. Other examples of auditors not being sufficiently skeptical of evidence include:

- Failure to gather sufficient information
- Overweighting evidence that confirms expectations
- Reliance on management's honesty and integrity

Please ensure that you are sufficiently skeptical of evidence when performing this analytical review. In 2-3 sentences, describe an instance when you were not sufficiently skeptical of management-provided explanations or other audit evidence.

The partner on this task is primarily concerned…

- ❑ with my judgment accuracy.
- ❑ with me being skeptical of management-provided explanations and other audit evidence.

Actively questioning management's assertions and critically assessing audit evidence increases the effectiveness of audits.

- ❑ True
- ❑ False

PARTNER INSTRUCTIONS
JUDGMENT SKEPTICISM CONDITION

Recent professional standards and the PCAOB stress the exercising of professional skepticism to prevent and detect fraud. The engagement partner is concerned that our auditors sometimes might not exercise sufficient professional skepticism. Specifically, the engagement partner is concerned that our auditors, even when focused on accuracy, sometimes fail to actively consider the possibility of making incorrect judgments and decisions. This concern is based on pervasive evidence that experts in a variety of fields, such as medicine and law, tend to be overconfident in their judgments, and, on occasion, make incorrect judgments. Common expert errors include:

- Failure to gather sufficient information
- Overweighting evidence that confirms expectations
- Overconfidence in own or others' technical knowledge

Please ensure that you are sufficiently skeptical when performing this analytical review in terms of considering the possibility of making incorrect judgments.

In 2-3 sentences, describe an instance when you were overconfident precluding you from actively considering the possibility of making incorrect judgments.

The partner on this task is primarily concerned…

- ❑ with my judgment accuracy.
- ❑ with me being skeptical of my judgment and decision making and actively considering the possibility of making incorrect judgments.

Overconfidence sometimes leads to experts making incorrect judgments and, therefore, can be detrimental to the effectiveness of audits.

- ❑ True
- ❑ False

ANALYTICAL REVIEW INSTRUCTIONS
You will next be presented with a significant unexpected fluctuation in PPC's account balances along with a management-provided explanation. Your first task will be to assess the likelihood that the management-provided explanation substantially accounts for the entire fluctuation. Your second task will be to identify and list any alternative explanations and rate the associated likelihood that each explanation substantially accounts for the entire fluctuation.

PRELIMINARY ANALYTICAL REVIEW

During this preliminary analytical review, see Appendix 1 for PPC's financial statements.

Insurance companies pay large up-front costs (e.g., sales commissions to insurance agents) to acquire business. As the costs of acquiring new insurance policies benefits the insurance company over the entire life of the policy, GAAP allows insurance companies to treat a portion of these costs as an asset rather than an immediate expense. These deferred policy acquisition costs include commissions, premium taxes, and other sales costs incurred in connection with writing business. These costs are capitalized and amortized over the policy period.

This year, PPC's deferred policy acquisition cost capitalization rate has increased significantly. Unearned premium represents the collected premium for the policy period remaining on in-force contracts.

Summary information related to policy acquisition costs is listed below:

	12/31/2007	12/31/2006
Deferred Acquisition Costs	6,799,012	6,087,340
Unearned Premium (UEP)	68,013,930	65,796,100
DAC as a percent of UEP	10.0%	9.3%

In response to your inquiry about the reason for the increase, management provided the following explanation:

"We raised commission rates during 2007 in an attempt to boost premium. Thus, the amount of capitalized commission is higher in 2007 compared to 2006."

On a scale between 0 - 100 (0 = impossible; 100 = absolutely certain), what is the probability that the management-provided explanation accounts for substantially all of the observed fluctuation?

Enter a value 0 – 100 _____

Please list any other potential explanations for the increased capitalization rate. And, on a scale between 0 - 100 (0 = impossible; 100 = absolutely certain), what is the probability that each of the explanations that you provide accounts for substantially all of the observed fluctuation?

Other Potential Explanations	Value 0 - 100

On a scale between 0 - 100 (0 = impossible; 100 = absolutely certain), what is the probability that...

an unlisted non-misstatement explanation accounts for substantially all of the observed fluctuation? _____

an unlisted explanation, involving a misstatement, accounts for substantially all of the observed fluctuation? _____

On a scale between 0 - 100 (0 = impossible; 100 = absolutely certain), what is the probability that a combination of...

non-misstatement explanations accounts for substantially all of the observed fluctuation? _____

misstatement explanations accounts for substantially all of the observed fluctuation? _____

both non-misstatement AND misstatement explanations accounts for substantially all of the observed fluctuation? _____

On a probability scale between 0 - 100 (0 = it is impossible that the balance is materially misstated; 100 = it is absolutely certain that the balance is materially misstated), please assess the risk of material misstatement for the deferred acquisition cost balance.

Enter value 0 – 100 _____

In the previous question, you provided your best estimate of the risk of material misstatement for the deferred acquisition cost balance. Using the same 0 - 100 scale, within what range do you believe the true risk of material misstatement is?
(Note: your previous answer should be somewhere within this range)

Lowest possible risk of material misstatement _____

Highest possible risk of material misstatement _____

Last year, the engagement team budgeted and spent 12 hours auditing the deferred acquisition cost balance. How many hours would you like to budget for the current year audit?

Enter a value > 0 _____

On a scale between 0 - 100 (0 = no confidence; 100 = extreme confidence), how confident are you in your assessments?

Enter a value 0 – 100 _____

WRAP-UP QUESTIONS

1. Experience Level

- ❑ Partner
- ❑ Senior Manager
- ❑ Manager
- ❑ Senior
- ❑ Staff

2. Industry Specialization

- ❑ Insurance
- ❑ Manufacturing
- ❑ Banking
- ❑ Real Estate
- ❑ Health Care
- ❑ Telecommunications
- ❑ Utilities
- ❑ Technology
- ❑ Government
- ❑ Non-profit
- ❑ Entertainment
- ❑ Other
- ❑ None

3. Number of Years of Auditing Experience _____ years

4. Years of Experience Auditing…

property and casualty insurance clients _____ years

life and health insurance clients _____ years

other financial services clients _____ years

clients in other industries _____ years

5. Percent of Year Spent Auditing…
(please sum to 100)

property and casualty insurance clients _____ percent

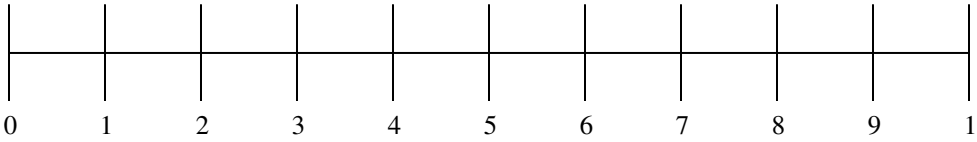
life and health insurance clients _____ percent

other financial services clients _____ percent

clients in other industries _____ percent

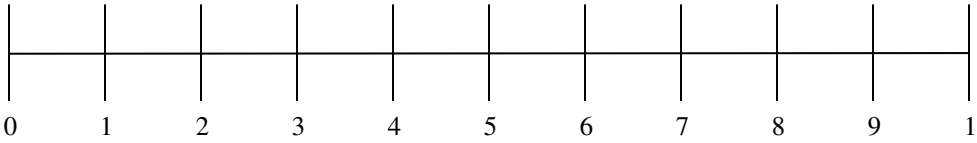
6. How much experience do you have performing preliminary analytical review for...

property and casualty insurance clients



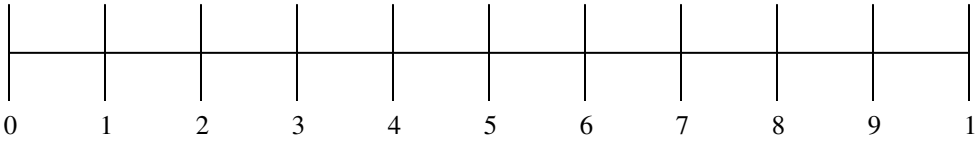
no experience extensive experience

life and health insurance clients



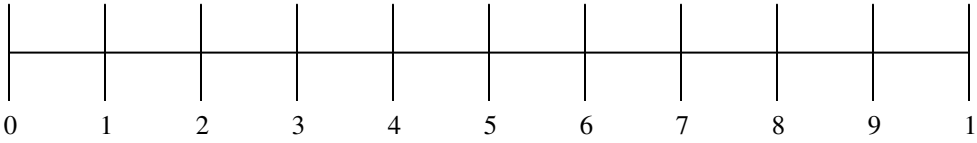
no experience extensive experience

other financial services clients



no experience extensive experience

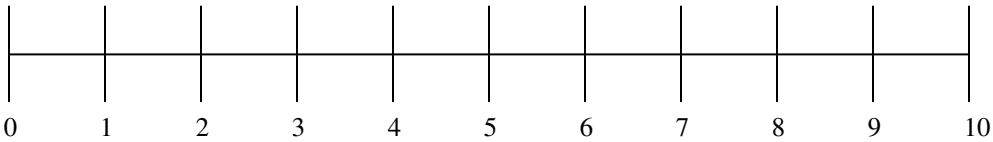
clients in other industries



no experience extensive experience

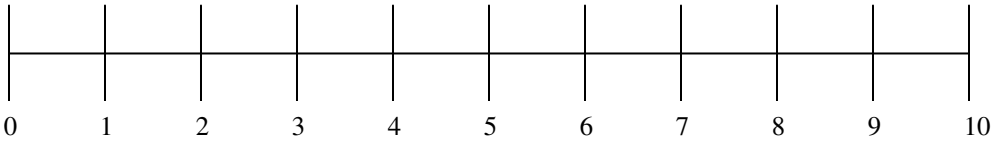
7. How would you assess your auditing relevant knowledge compared to...

your peers with the same rank and industry specialization



I am much less knowledgeable I am much more knowledgeable

your peers with the same rank but different industry specialization

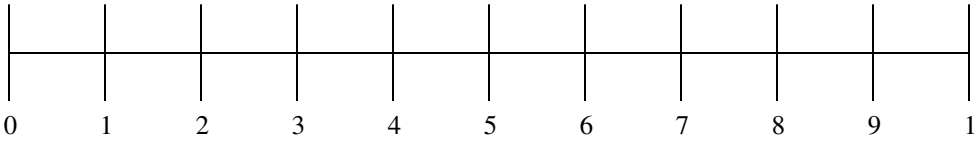


I am much less knowledgeable I am much more knowledgeable

8. To what extent...

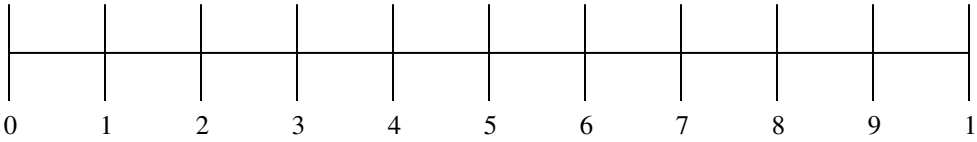
(Please circle number. If N/A, leave scale blank and circle N/A)

did you consider that you might be overconfident in your judgments?



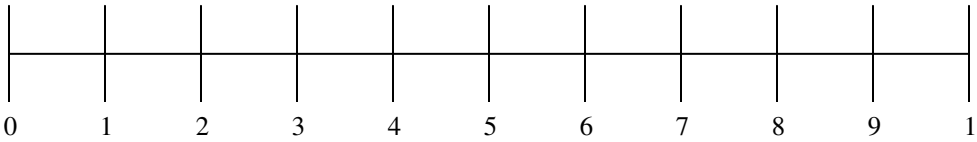
not at all to a great extent N/A

did you consider the potential fallibility of your judgments and decisions?



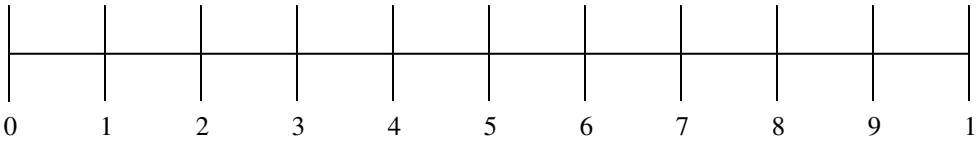
not at all to a great extent N/A

was the partner in this exercise concerned with the ACCURACY of your judgments? (not in *Control*)



not at all to a great extent N/A

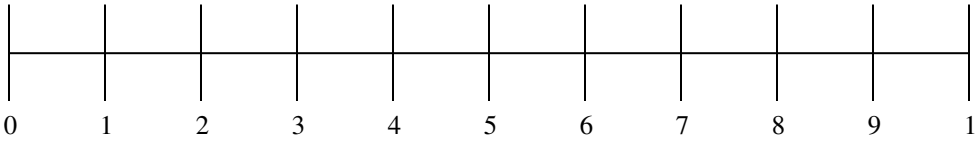
did the partner's skepticism request make you defensive? (not in *Control*)



not at all to a great extent N/A

9. Please rate yourself on the following scale.

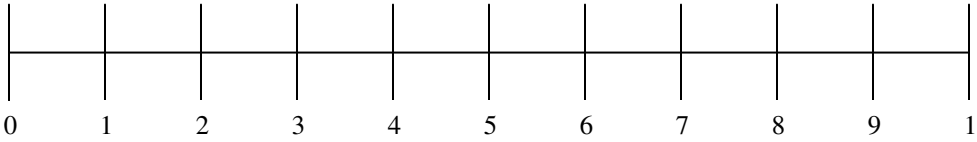
On the typical client, I try to avoid...



upsetting the client needlessly missing a misstatement

10. Within your industry specialization (or the industry within you work the majority of the time if you are not an industry specialist), how common are MATERIAL misstatements?

MATERIAL misstatements are...



very uncommon very common

11. Approximately how many, if any,...

MATERIAL misstatements have you personally detected? _____

audit engagements have you been a member of where a
MATERIAL misstatement was detected? _____

12. To which charity would you like the researcher to donate money?

- ❑ American Cancer Society
- ❑ Salvation Army
- ❑ St. Jude Children's Research Hospital
- ❑ American Red Cross
- ❑ Humane Society

13. Approximately how much time, in minutes, did this task require? _____ Minutes

PPC Financial Statements

Income Statement

	2007	2006
REVENUES		
Net premiums earned	142,582	136,604
Investment income	6,995	6,268
Net realized gains (losses) on securities	1,093	(94)
Total revenues	150,670	142,778
EXPENSES		
Losses and loss adjustment expenses	106,794	102,043
Policy acquisition costs	22,328	19,903
Other underwriting expenses	11,264	10,519
Investment expenses	121	115
Total expenses	140,507	132,580
NET INCOME		
Income before income taxes	10,163	10,198
Provision for income taxes	3,064	3,416
Net income	7,099	6,782

Balance Sheet	**12/31/2007**	**12/31/2006**
ASSETS		
Investments	145,538	142,132
Cash	60	53
Accrued investment income	1,460	1,300
Premiums receivable, net of allowance for doubtful accounts of $1,906 and $1,852)	38,692	37,914
Deferred acquisition costs	6,799	6,087
Income Taxes	637	73
Property and equipment, net of accumulated depreciation of $9,791 and $9,037)	16,171	15,792
Other assets	3,233	3,292
Total assets	212,590	206,643
LIABILITIES AND SHAREHOLDERS' EQUITY		
Unearned premiums	68,014	65,796
Loss and loss adjustment expense reserves	62,023	58,330
Accounts payable, accrued expenses, and other liabilities	22,110	21,097
Total liabilities	152,147	145,223
Common shares, $1.00 par value	6,858	6,711
Paid-in capital	7,638	7,599
Net unrealized gains on investments	3,108	5,419
Retained earnings	42,839	41,691
Total shareholders' equity	60,443	61,420
Total liabilities and shareholders' equity	212,590	206,643

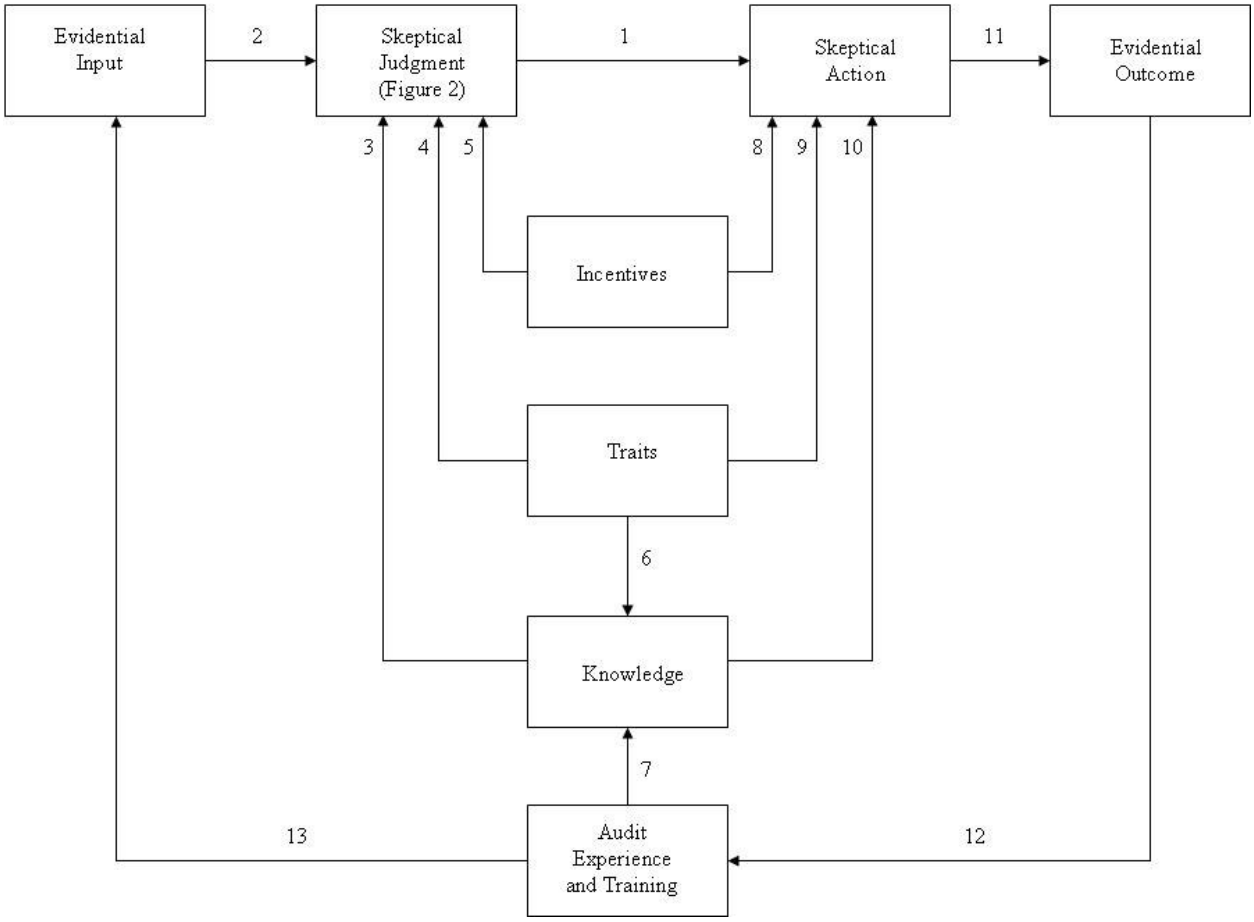
*all figures in thousands

APPENDIX B: SAMPLE OF OPEN-ENDED RESPONSES

Evidence Skepticism	Judgment Skepticism
Please ensure that you are sufficiently skeptical of evidence when performing this analytical review. In 2-3 sentences, describe an instance when you were not sufficiently skeptical of management-provided explanations or other audit evidence.	Please ensure that you are sufficiently skeptical when performing this analytical review in terms of considering the possibility of making incorrect judgments. In 2-3 sentences, describe an instance when you were overconfident precluding you from actively considering the possibility of making incorrect judgments.
Responses	
During my first busy season, I took the word of the HR dept regarding headcounts of one of my client's subsidiaries and it turned out to be wrong.	While auditing a low risk routine area such as fixed assets, assumed the depreciation expense was right although the analytical procedures were not within our precision range. I was confident that the number had to be right, but there were variables in our analytic that were not considered.
With certain clients with very qualified personnel and a history of "adjustment-free" audits, I tend to be more trustworthy and less skeptical. A client of mine recently made a .5% change to their DAC calculation and looking back I didn't really question their motives.	I had been on the same client for 5 years and knew their business very well, however, they developed a new business line and it performed better than expected. The actuaries that reviewed the claims experience felt the reserve was overstated. I was too focused on my prior knowledge to entertain the notion that perhaps they should reduce the reserve.
Management representations are often over-relied upon in lieu of obtaining substantive audit evidence. For example, I had an experience where a company had assets held for sale and a large part of the audit evidence supporting the fair value was management representation in lieu of specific fair value computations.	On our team, we have encountered times when we were confident that an error we suspected was present would be immaterial. We did do further testing and discovered that it was not, but probably would not have done so without the guidance and involvement of more senior members of the engagement team.
During substantive analytics over payroll, we did not verify the average compensation percentages provided by the benefits manager as the amounts provided confirmed our expected payroll expense. The payroll expense was recalculated after looking at the year-end ledger balance.	On one certain client that I was on, I had a very strong knowledge of their business and related accounts (their business was very consistent year over year). When performing account fluctuations, I may have been overconfident in my ability to predict the relationship of certain accounts, whereas the reason for the increase may have been due to another reason other than my expectation (i.e. flat change may have been a "netting" of two changes, rather than no change in the account).
We believed we had all of the Restricted Stock Award Agreements applicable to the client's Stock Incentive Plan, because they were publicly filed, so we had made certain conclusions around accounting for award modifications based on those agreements. We did not sufficiently question management as to whether there were additional agreements specific to each employee which further explained the terms of the r-stock awards and ended up changing our conclusions for accounting for award modifications.	On an engagement that I have been on for several years, I reviewed the client's loss reserves similar to how I had reviewed them in prior year. I was so confident that I understood the reserving methodology that I did not consider that I could have misunderstood how the reserving was set in the current year.
In performing routine inquiries (e.g., is management aware of any adverse regulatory communications, any adverse results of other external exams/audits, etc), I accepted management's responses without much skepticism. The inquiries have not identified such matters in the past and management has trustworthy track record.	Upon taking on a job that was new to me as a manager I placed more reliance than I should have on the prior team's work. I should have spent more time challenging some of the conclusions and understanding them such that I could own them throughout the audit process.

FIGURES

FIGURE 1: NELSON'S (2009) MODEL OF PROFESSIONAL SKEPTICISM



Nelson's (2009) model illustrates how auditor knowledge, traits, and incentives combine with audit evidence to produce judgments and actions that reflect professional skepticism. The model is recursive in that evidence is both an input (evidential input; Link 2) and output (evidential output; Link 11) of auditor decision processing whereby the output evidence becomes part of the auditor's experience (Link 12) and future input evidence into subsequent decision processing (Link 13). Skeptical judgments relate to the auditor's cognition and state of mind (e.g., hypothesis generation and probability judgment) and must reach a threshold to produce skeptical actions (Link 1; Shaub and Lawrence 1996). Skeptical actions are an attribute of auditor performance (e.g., planning decisions, disposition of audit differences, audit reporting).

In addition to evidence, the model includes three determinants of skeptical judgments (Links 3-5) and actions (Links 8-10): knowledge, traits, and incentives. Knowledge is a product of audit experience/specialization (Link 7) and traits (Link 6) and includes knowledge of evidential patterns and frequencies of non-misstatement and misstatement explanations. Traits are non-knowledge attributes of the auditor that are usually considered fixed once the auditor commences audit experience and training. Nelson (2009) divides traits into three categories: problem-solving ability, ethical/moral reasoning, and dispositional skepticism (e.g., Hurtt 2009). Auditors balance a multitude of countervailing PS-related incentives that may be direct or indirect, immediate or probabilistic, and financial or social (Nelson 2009).

FIGURE 2: A DUAL-PROCESS REPRESENTATION OF PROFESSIONAL JUDGMENT

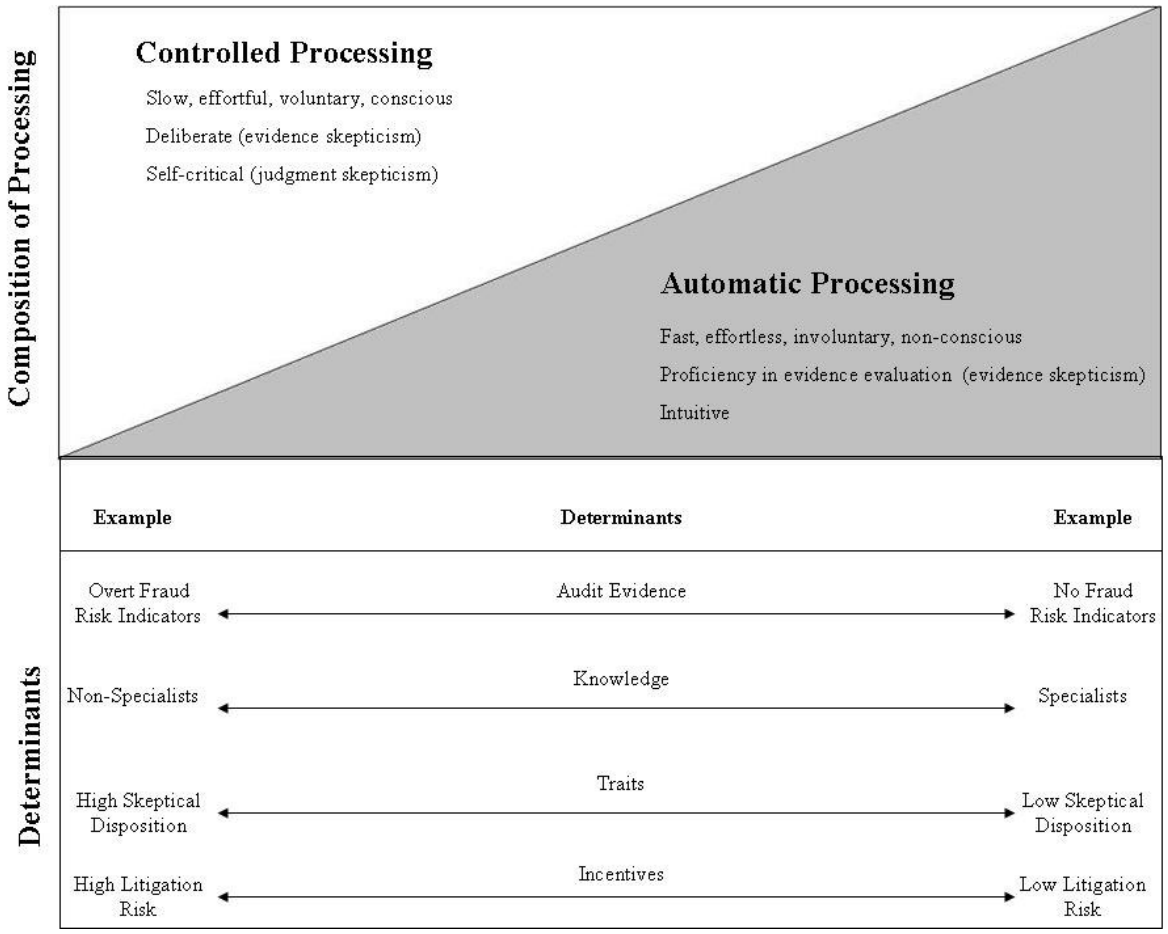
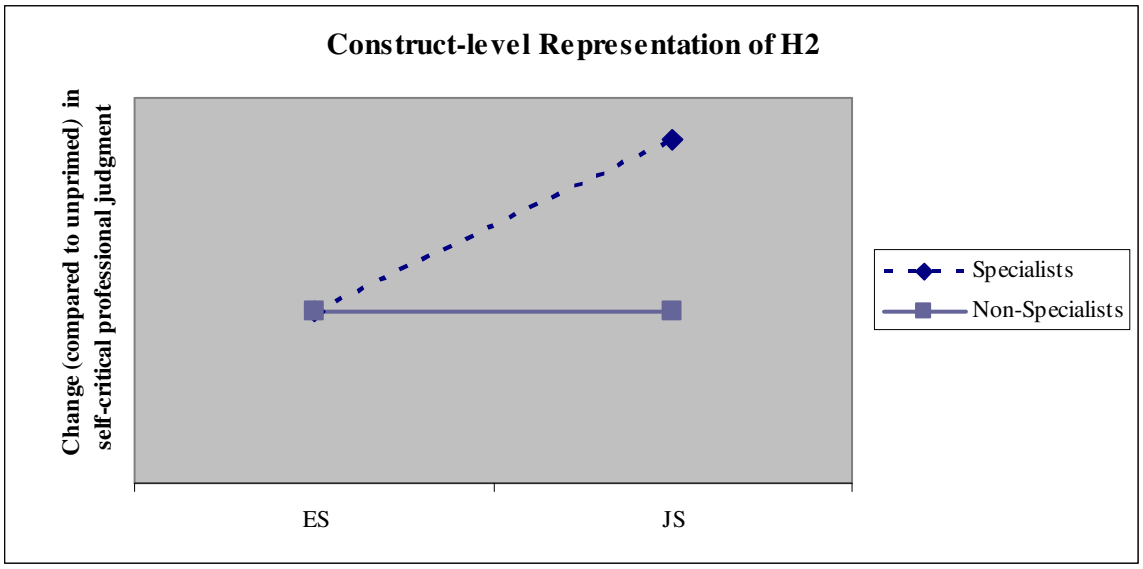


FIGURE 3: GRAPHICAL REPRESENTATION OF HYPOTHESES



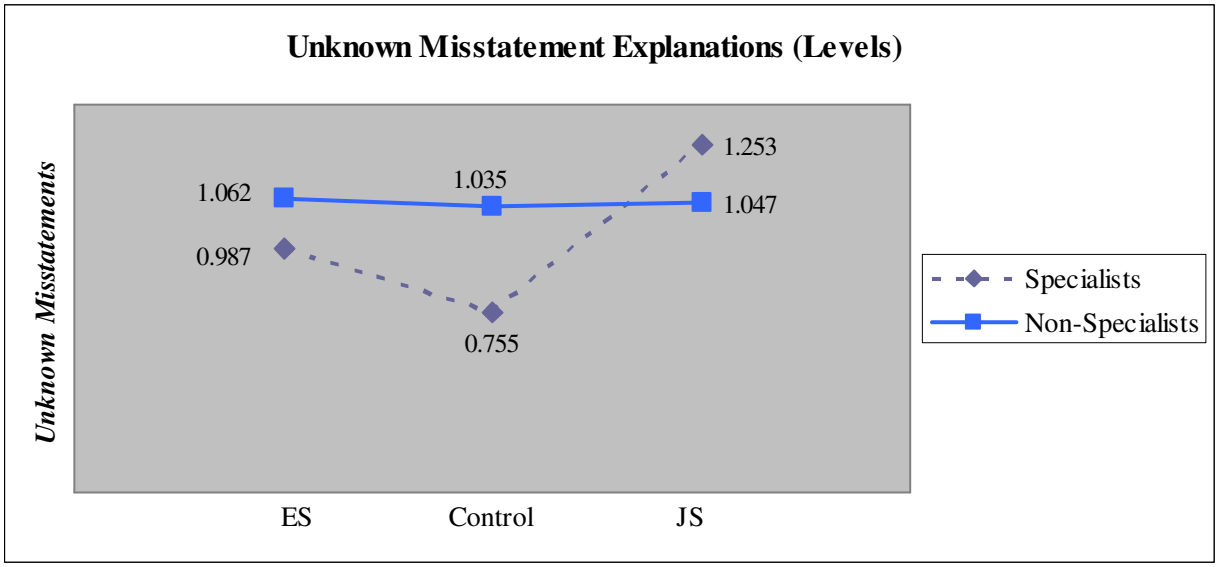
H2 was tested using the contrast: $3*(JS^{S} - C^{S}) - 1/3*(ES^{S} - C^{S} + JS^{NS} + ES^{NS} - 2*C^{NS}) > 0$

Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A).

The change on the y-axis refers to the difference from either the specialist or non-specialist *Control* condition.

FIGURE 4: GRAPHICAL REPRESENTATION OF RESULTS

Panel A: Unknown Misstatement Explanations - Levels (Table 2) [a]



Panel B: Unknown Misstatement Explanations - Differences (Table 2) [a,b]

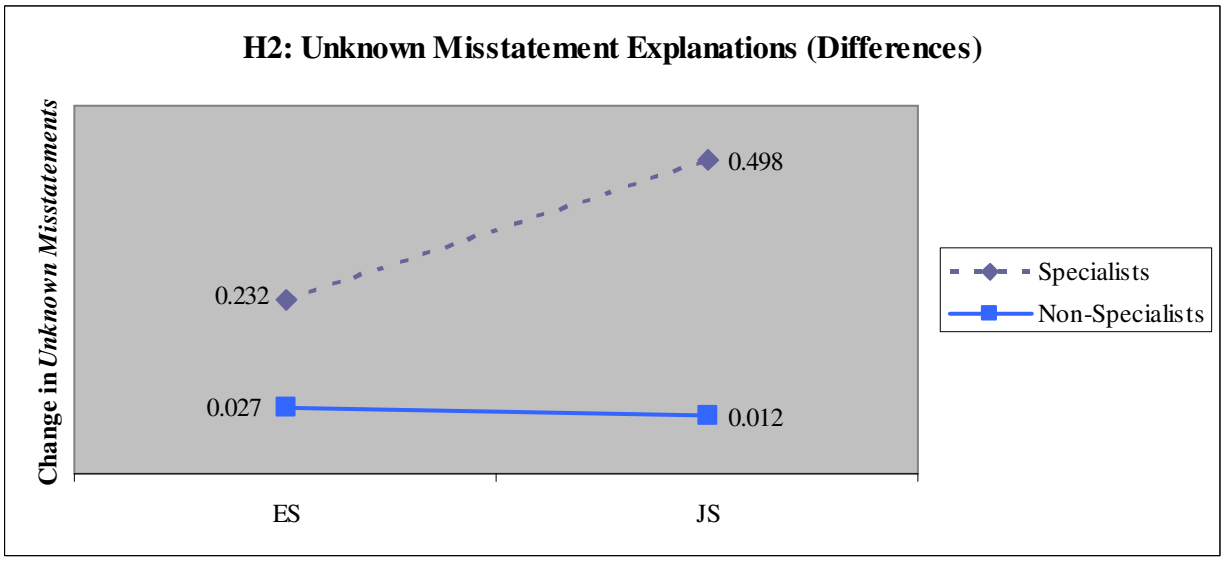
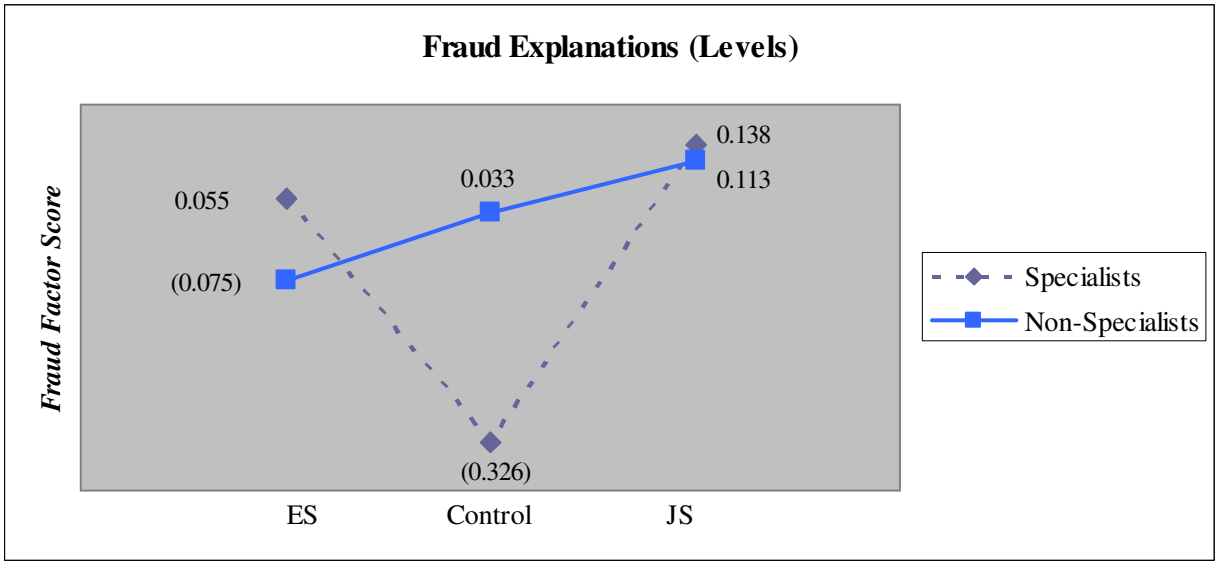
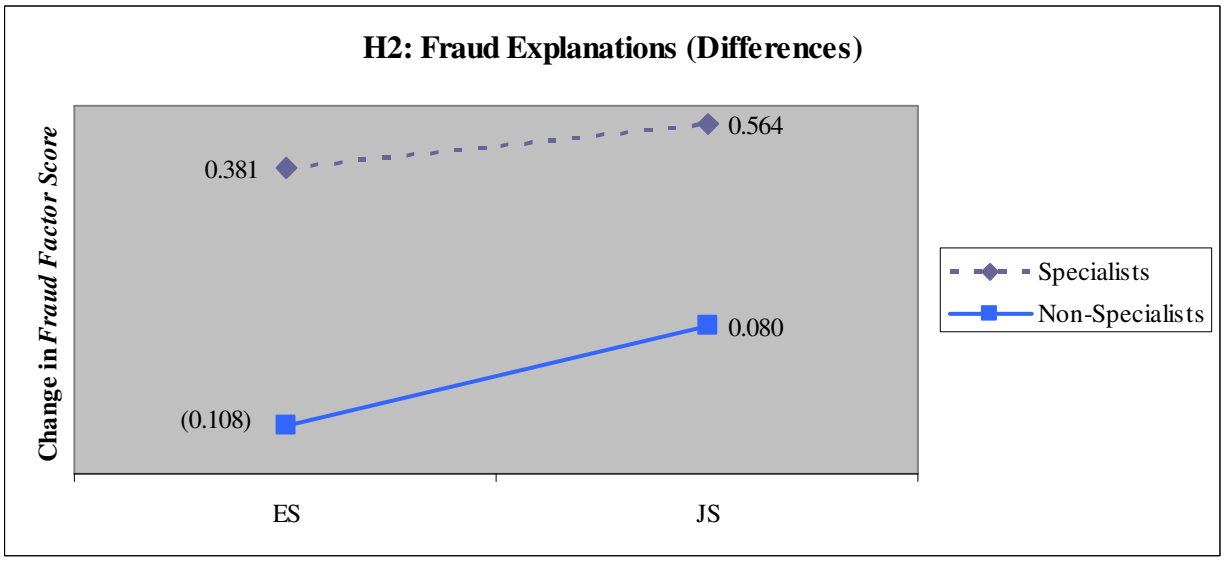


FIGURE 4 (CONT.)

Panel C: Fraud Explanations - Levels (Table 3) [a]



Panel D: Fraud Explanations - Differences (Table 3) [a,b]



a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A).
b In Panels B and D, the change on the y-axis refers to the difference from either the specialist or non-specialist *Control* condition.

TABLES

TABLE 1: PARTICIPANT DEMOGRAPHIC INFORMATION

	Specialists [a]		Non-specialists [a]	
N	n = 58		n = 113	
Experience Level (n)	Partner	5	Partner	4
	Senior Manager	17	Senior Manager	12
	Manager	8	Manager	7
	Senior	26	Senior	84
	Staff	2	Staff	6
Firm Size (n)	Big 4	51	Big 4	106
	Other	7	Other	7
Years of experience				
General	6.67		5.14	
P&C Insurance	3.89		0.26	
L&H Insurance	3.24		0.15	
Other Financial Services	2.60		1.47	
Other Industries	2.92		4.37	
Percent of year:				
P&C Insurance	39.7%		0.9%	
L&H Insurance	37.7%		1.0%	
Other Financial Services	10.1%		25.4%	
Other Industries	12.5%		72.7%	
Experience performing preliminary analytical review (11pt Likert scale):				
P&C Insurance	5.68		0.66	
L&H Insurance	4.95		0.61	
Other Financial Services	4.00		2.96	
Other Industries	4.44		6.84	

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry.

TABLE 2: UNKNOWN MISSTATEMENT EXPLANATIONS

Panel A: Descriptive Statistics [a]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***n=58***	***n=37***	***n=42***	***n=34***	***n=113***
Unknown Misstatements	0.987	0.755	1.253	0.998	1.062	1.035	1.047	1.048
	0.625	0.530	0.527	0.590	0.598	0.567	0.562	0.571

Panel B: Analysis of Covariance [b]

Source	SS	df	MS	F	p
Skepticism Target	1.627	2	0.814	2.599	0.077
Specialization	0.243	1	0.243	0.776	0.380
Skepticism Target x Specialization	1.075	2	0.537	1.716	0.183
Misstatement Sensitivity	1.640	1	1.640	5.238	0.023
Non-Specialists' Insurance and Closely-Related Experience	1.330	1	1.330	4.250	0.041
Error	51.028	163	0.313		

Panel C: Planned Comparisons [c]

	Unknown Misstatements	
Contrast	$F_{1,163}$	p
H1: $C^{NS} - C^{S} > 0$	3.262	0.036
H2: $3*(JS^{S} - C^{S}) - 1/3*(ES^{S} - C^{S} + JS^{NS} + ES^{NS} - 2*C^{NS}) > 0$	4.094	0.022

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *Unknown Misstatements:* the total probability assigned to unknown misstatement explanations.

b Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *Misstatement Sensitivity*: reported frequency of misstatements within their industry specialization; *Non-Specialists' Insurance and Closely-Related Experience*: percent of year auditing insurance and other financial services clients * *Specialization.*

c All p-values in Panel C are one-tailed due to a directional prediction.

TABLE 3: FRAUD EXPLANATIONS – FACTOR SCORE

Panel A: Factor Analysis [a]

	Component #1
Number of Fraud Explanations	0.941
Probability of Fraud Explanations	0.941
Eigenvalue	1.770
Percentage of Variance Explained	88.52%

Panel B: Descriptive Statistics [b]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***N=58***	***n=37***	***n=42***	***n=34***	***n=113***
Fraud Factor Score	0.055	-0.326	0.138	-0.042	-0.075	0.033	0.113	0.022
	1.388	0.000	1.311	1.107	0.989	0.804	1.068	0.945

Panel C: Analysis of Covariance [c]

Source	SS	Df	MS	F	p
Specialization	0.575	1	0.575	0.609	0.436
Skepticism Target	2.998	2	1.499	1.589	0.207
Specialization x Skepticism Target	1.845	2	0.922	0.978	0.378
Judgment Fallibility	3.782	1	3.782	4.009	0.047
Overconfidence	11.582	1	11.582	12.277	0.001
Internet	4.983	1	4.983	5.282	0.023
Error	152.832	162	0.943		

Panel D: Planned Comparisons [d]

	Fraud Factor Score	
Contrast	$F_{1,162}$	p
H1: $C^{NS} - C^{S} > 0$	2.578	0.055
H2: $3*(JS^{S} - C^{S}) - 1/3*(ES^{S} - C^{S} + JS^{NS} + ES^{NS} - 2*C^{NS}) > 0$	1.300	0.128

a Number of Fraud Explanations: The number of self-generated fraud explanations; *Probability of Fraud Explanations*: The sum of the probabilities for each self-generated fraud explanation.
b Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *Fraud Factor Score:* factor score from factor analysis in Panel A.
c Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *Judgment Fallibility*: reported consideration of judgment fallibility; *Overconfidence* : reported consideration of overconfidence; *Internet:* dummy variable for internet-based participants.
d All p-values in Panel D are one-tailed due to a directional prediction.

TABLE 4: FRAUD EXPLANATIONS – RAW DATA

Panel A: Descriptive Statistics [a]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***N=58***	***n=37***	***n=42***	***n=34***	***n=113***
Number Fraud Explanations	0.150	0.000	0.211	0.121	0.108	0.214	0.206	0.177
	0.489	0.000	0.535	0.422	0.393	0.470	0.479	0.448
Probability Fraud Explanations	0.068	0.000	0.071	0.047	0.041	0.034	0.064	0.045
	0.279	0.000	0.235	0.211	0.182	0.117	0.193	0.164

Panel B: Repeated Measures Analysis of Covariance [b]

Source	SS	Df	MS	F	p
Between-Participant Factors					
Specialization	0.171	1	0.171	1.040	0.309
Skepticism Target	0.446	2	0.223	1.361	0.259
Specialization x Skepticism Target	0.381	2	0.190	1.162	0.316
Judgment Fallibility	0.609	1	0.609	3.716	0.056
Overconfidence	1.810	1	1.810	11.041	0.001
Internet	0.970	1	0.970	5.918	0.016
Error	26.559	162	0.164		
Within-Participant Factors					
Type	0.010	1	0.010	0.193	0.661
Type x Specialization	0.138	1	0.138	2.770	0.098
Type x Skepticism Target	0.055	2	0.027	0.549	0.579
Type x Specialization x Skepticism Target	0.139	2	0.070	1.397	0.250
Type x Judgment Fallibility	0.081	1	0.081	1.621	0.205
Type x Overconfidence	0.201	1	0.201	4.032	0.046
Type x Internet	0.291	1	0.291	5.852	0.017
Error	8.069	162	0.050		

Panel C: Planned Comparisons [c]

	Number Fraud Explanations		*Probability Fraud Explanations*	
Contrast	$F_{1,162}$	p	$F_{1,162}$	p
H1: $C^{NS} - C^{S} > 0$	4.546	0.017	0.774	0.190
H2: $3*(JS^{S} - C^{S}) - 1/3*(ES^{S} - C^{S} + JS^{NS} + ES^{NS} - 2*C^{NS}) > 0$	2.046	0.077	0.501	0.240

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *Number Fraud Explanations*: The number of self-generated fraud explanations; *Probability Fraud Explanations*: The sum of the probabilities for each self-generated fraud explanation.
b Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *Judgment Fallibility*: reported consideration of judgment fallibility; *Overconfidence* : reported consideration of overconfidence; *Internet:* dummy variable for internet-based participants; *Type*: within-subjects manipulation of dependent variables (*Number Fraud Explanations; Probability Fraud Explanations*)
c All p-values in Panel C are one-tailed due to a directional prediction.

TABLE 5: ERROR EXPLANATIONS

Panel A: Descriptive Statistics [a]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***N=58***	***n=37***	***n=42***	***n=34***	***n=113***
Number Error Explanations	0.130	0.061	0.066	0.086	0.157	0.060	0.107	0.106
	0.198	0.125	0.127	0.156	0.327	0.174	0.198	0.242
Probability Error Explanations	0.500	0.316	0.368	0.397	0.459	0.310	0.500	0.416
	0.513	0.478	0.684	0.560	0.767	0.749	0.862	0.787

Panel B: Repeated Measures Analysis of Covariance [b]

Source	SS	Df	MS	F	p
Between-Participant Factors					
Specialization	0.180	1	0.180	0.469	0.494
Skepticism Target	0.583	2	0.291	0.760	0.469
Specialization x Skepticism Target	0.523	2	0.261	0.683	0.507
Judgment Fallibility	1.779	1	1.779	4.645	0.033
Years of Experience	3.664	1	3.664	9.565	0.002
Error	62.437	163	0.383		
Within-Participant Factors					
Type	0.144	1	0.144	0.949	0.332
Type x Specialization	0.024	1	0.024	0.158	0.692
Type x Skepticism Target	0.063	2	0.032	0.209	0.812
Type x Specialization x Skepticism Target	0.187	2	0.094	0.615	0.542
Type x Judgment Fallibility	0.802	1	0.802	5.277	0.023
Type x Years of Experience	1.493	1	1.493	9.830	0.002
Error	24.762	163	0.152		

Panel C: Simple Main Effects [c]

	Number Error Explanations		*Probability Error Explanations*	
Contrast	$F_{1,163}$	p	$F_{1,163}$	p
Non-Specialists: ES - Control	1.910	0.169	5.402	0.021
Non-Specialists: JS - Control	2.290	0.132	1.463	0.228
Specialists: ES - Control	0.047	0.829	0.338	0.562
Specialists: JS - Control	0.128	0.721	0.107	0.743

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *Number Error Explanations*: The number of self-generated error explanations; *Probability Error Explanations*: The sum of the probabilities for each self-generated error explanation.
b Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *Judgment Fallibility*: reported consideration of judgment fallibility; *Years of Experience*: years of auditing experience; *Type*: within-subjects manipulation of dependent variables (*Number Error Explanations; Probability Error Explanations*)
c All p-values in Panel C are two-tailed due to the lack of a directional prediction.

TABLE 6: NON-MISSTATEMENT EXPLANATIONS

Panel A: Descriptive Statistics [a]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***N=58***	***n=37***	***n=42***	***n=34***	***n=113***
Number Non-Misstatement Explanations	2.600	2.316	2.316	2.414	1.676	1.595	1.912	1.717
	1.818	1.635	1.293	1.579	1.334	1.432	1.464	1.405
Probability Non-Misstatement Explanations	0.917	0.884	0.950	0.917	0.576	0.471	0.531	0.523
	0.971	0.796	0.834	0.857	0.567	0.552	0.382	0.510
Management Explanation	0.574	0.553	0.508	0.545	0.454	0.511	0.516	0.494
	0.209	0.261	0.222	0.229	0.224	0.240	0.183	0.219
Unknown Non-Misstatements	0.911	0.943	1.016	0.956	0.867	1.023	0.843	0.918
	0.477	0.412	0.373	0.419	0.453	0.462	0.356	0.434

Panel B: Repeated Measures Analysis of Covariance [b]

Source	SS	Df	MS	F	p
Between-Participant Factors					
Specialization	5.099	1	5.099	5.161	0.024
Skepticism Target	0.055	2	0.027	0.028	0.973
Specialization x Skepticism Target	0.277	2	0.139	0.140	0.869
General Confidence	1.779	1	1.779	1.800	0.182
Internet	8.673	1	8.673	8.779	0.004
Error	161.024	163	0.988		
Within-Participant Factors					
Type	0.788	3	0.263	0.454	0.715
Type x Specialization	3.479	3	1.160	2.004	0.113
Type x Skepticism Target	0.773	6	0.129	0.223	0.969
Type x Specialization x Skepticism Target	2.116	6	0.353	0.609	0.723
Type x General Confidence	4.538	3	1.513	2.614	0.051
Type x Internet	12.102	3	4.034	6.970	0.000
Error	283.020	489	0.579		

Panel C: Simple Main Effects [c]

	Number Non-Misstatement Explanations		*Probability Non-Misstatement Explanations*		*Management Explanation*		*Unknown Non-Misstatements*	
Contrast	$F_{1,163}$	p	$F_{1,163}$	p	$F_{1,163}$	p	$F_{1,163}$	p
Non-Specialists: ES - Control	0.049	0.825	0.611	0.435	0.560	0.455	2.650	0.105
Non-Specialists: JS - Control	0.799	0.373	0.157	0.693	0.052	0.820	3.417	0.066
Specialists: ES - Control	0.159	0.691	0.002	0.965	0.189	0.664	0.084	0.772
Specialists: JS - Control	0.052	0.820	0.032	0.859	0.289	0.592	0.218	0.641

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *Number Non-Misstatement Explanations*: The number of self-generated non-misstatement explanations; *Probability Non-Misstatement Explanations*: The sum of the probabilities for each self-generated non-misstatement explanation; *Management Explanation*: The probability of the management-provided explanation; *Unknown Non-Misstatements*: the total probability assigned to unknown non-misstatement explanations

b Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *General Confidence*: knowledge relative to industry specialization peers; *Internet:* dummy variable for internet-based participants; *Type*: within-subjects manipulation of dependent variables (*Number Non-Misstatement Explanations; Probability Non-Misstatement Explanations; Management Explanation, Unknown Non-Misstatements*)

c All p-values in Panel C are two-tailed due to the lack of a directional prediction.

TABLE 7: RISK ASSESSMENTS

Panel A: Descriptive Statistics [a]

(Mean, Std Dev)	***Specialists***				***Non-Specialists***			
	ES	***Control***	***JS***	***Total***	***ES***	***Control***	***JS***	***Total***
Dependent Variable	***n=20***	***n=19***	***n=19***	***n=58***	***n=37***	***n=42***	***n=34***	***n=113***
RMM	0.306	0.242	0.315	0.288	0.353	0.412	0.388	0.386
	0.221	0.174	0.249	0.215	0.210	0.276	0.204	0.234

Panel B: Analysis of Covariance [b]

Source	SS	df	MS	F	p
Skepticism Target	175.450	2	87.725	0.170	0.844
Specialization	2607.657	1	2607.657	5.044	0.026
Skepticism Target x Specialization	922.030	2	461.015	0.892	0.412
Misstatement Sensitivity	1941.236	1	1941.236	3.755	0.054
Error	84792.984	164	517.030		

Panel C: Simple Main Effects [c]

	RMM	
Contrast	$F_{1,164}$	p
Non-Specialists: ES - Control	1.106	0.294
Non-Specialists: JS - Control	0.037	0.848
Specialists: ES – Control	0.780	0.378
Specialists: JS – Control	0.664	0.416

a Specialists: Participants specializing within the insurance industry; *Non-specialists*: Participants specializing within any other industry; *ES*: Participants in the evidence skepticism condition (See Appendix A); *Control* : Participants in the control condition (unprimed); *JS*: Participants in the judgment skepticism condition (See Appendix A); *RMM:* risk of material misstatement.
b Specialization (*Specialists* = 0, *Non-Specialists* = 1); *Skepticism Target* (*ES* = 0, *Control* = 1, *JS* = 2); *Misstatement Sensitivity*: reported frequency of misstatements within their industry specialization;.
c All p-values in Panel C are two-tailed due to a lack of a directional prediction.