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Psychological Distance: The Relation Between Construals, Mindsets, and Professional Skepticism

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Psychological Distance: The Relation Between Construals, Mindsets, and Professional
Skepticism

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
School of Accountancy
College of Business
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DEDICATION

I dedicate this dissertation to my loving wife and children. To my wife, Monica, I cannot adequately express how grateful I am for the support you have shown me over the last several years. You suffered commutes that sometimes lasted several hours a day to go to and from a job you didn't particularly like...all so that our family could have a good life as I completed the doctoral program. I admire you, I respect you, and I love you.

To my children, Logan and Evan, thank you for providing me with the ultimate motivation to finish the program. It is every father's wish that his children have a better life than he did and I certainly hope to provide that better life to you. Thank you also for giving me something to look forward to at the end of a long day's work. I always enjoy spending time with you, even if it's just watching you improve yourselves in the dojo or on the wrestling mat. I look forward to watching you both become fine young men. I love you.

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ABSTRACT

In this study, I examine the influence of construals (interpretations) and mindsets on professional skepticism in auditors. Auditors have been criticized lately for not displaying enough professional skepticism, particularly in their audits of complex estimates (PCAOB 2008). Regulators speculate about and academic research shows a correlation between low professional skepticism and both audit failures and audit malpractice claims (Beasley et al. 2001; Anderson and Wolfe 2002). I hypothesize that prolonging the deliberative mindset in the audit judgment and decision-making process can increase professional skepticism in auditors.

Experienced auditors take part in a 1 x 3 between-participants experiment in which they play the role of a senior auditor charged with evaluating a client's fair value estimate. I manipulate the type of mindset (deliberative or implemental) invoked by the evidence documentation instructions and have a third condition in which participants do not have to document audit evidence. Using multiple measures of professional skepticism, I find that auditors in the deliberative mindset condition display higher professional skepticism than both auditors in the implemental mindset condition and auditors in the no documentation condition. I further analyze the types of textual responses entered by the auditors and offer direction for future research in this area.

1.0 INTRODUCTION

1.1 Research Questions and Motivation

The purpose of this study is to explore whether and how different mindsets influence professional skepticism. Professional skepticism, an attitude characterized by objectivity and a questioning mind, is a central tenet in the auditing standards (AU 230). Recently auditors have been criticized for not displaying enough professional skepticism, particularly in their audits of complex estimates (PCAOB 2008; Bratten et al. 2013). Prior studies correlate a lack of professional skepticism with both audit failures and audit malpractice claims (Beasley et al. 2001; Anderson and Wolfe 2002).

Gollwitzer (1990) and Gollwitzer and Bayer (1999), based on earlier work by Heckhausen (1986), describe two mindsets individuals enter before taking actions: the deliberative mindset and the implemental mindset. Individuals in a deliberative mindset are deciding whether to take an action while individuals in an implemental mindset are thought to be planning an action (Freitas et al. 2004). Figure 1 displays Heckhausen's (1986) original model. Prior research in psychology associates the deliberative mindset with objectivity and high-level (abstract) interpretations of evidence or alternatives (Gollwitzer 1990; Gollwitzer et al. 1990; Gollwitzer and Bayer 1999). Studies in psychology show that objectivity becomes greatly diminished when an individual enters the implemental mindset, as the individual becomes decided on a given action (Gollwitzer 1990; Gollwitzer et al. 1990; Gollwitzer and Bayer 1999; Freitas et al. 2004).

I address two research questions in this study. First, how do the deliberative and implemental mindsets affect an auditor's professional skepticism? Second, what effect will an intervention designed to prolong the deliberative mindset have on professional skepticism? Currently there is little empirical evidence that being in a deliberative mindset will have an effect on judgments and actions that would be indicative of professional skepticism.¹

Once decided upon an action, an individual focuses on evidence or alternatives that favor the chosen action (Harmon-Jones & Harmon-Jones 2002). Prior accounting research documents an analog to this effect that occurs when auditors have directional goals of pleasing their clients. Several studies note that auditors have a tendency to side with their clients, and this tendency leads to a biased search for and processing of audit evidence (Lundgren and Prislin 1998; Hackenbrack and Nelson 1998; Kadous et al. 2003; Montague 2010). The auditor behavior observed in these studies is consistent with the notion that auditors could be prone to moving directly into an implemental mindset, an act consistent with Gollwitzer's (1990) suggestion that the deliberative mindset can be bypassed.

Since professional skepticism could be reduced, if not eliminated, upon entry into the implemental mindset, keeping an auditor within the deliberative mindset for as long as possible could increase professional skepticism. Theoretically, auditors kept in a deliberative mindset will stay objective longer, which should increase their professional

¹ One possible exception is Taylor and Gollwitzer (1995) which shows that individuals in a deliberative mindset are more likely to attend to risk factors than are individuals in an implemental mindset. The study does not, however, explore how individuals act on those risk factors or how their judgments could be affected by those risk factors.

skepticism and help combat biases such as the tendency to side with the client described above. For example, in an audit of a complex estimate, an auditor who maintains a deliberative mindset longer should have a more objective search for and processing of audit evidence than one who moves into an implemental mindset early in the audit process. Further, Taylor and Gollwitzer (1995) show that individuals in a deliberative mindset are more likely to attend to risk factors than are individuals in an implemental mindset. This finding suggests that auditors who move into an implemental mindset early could have trouble assessing audit risks.

Prior research using construal level theory offers suggestions on how the deliberative mindset can be maintained. Construal level theory espouses the idea of psychological distance, the general feeling of how close (or far) an individual believes himself to be from something (Trope and Liberman 2010).² A deliberative mindset generally relates to high psychological distance (akin to objectivity in this context) while an implemental mindset has been associated with low psychological distance (Fujita et al. 2006; Fujita et al. 2007; Rim et al. 2009).

Trope and Liberman (2003; 2010) suggest that increased psychological distance can be achieved by processing information with high-level construals (interpretations). High-level construals are abstract, simple, and structured. For example, a high-level construal of the act of conducting a research study is that the researcher is “advancing science” (Trope and Liberman 2003, 405). In contrast, low-level construals are detailed, complex, and unstructured. A low-level construal of the act of conducting a research

² Note that “distance” in this theory relates not only to physical distance but also to other concepts such as temporal distance (how soon something will happen) and social distance (how close an individual feels to another emotionally) (Trope and Liberman 2003; 2010).

study is that the researcher is “testing a hypothesis,” or “entering the data collected this morning” (Trope and Liberman 2003, 405).³ Prior accounting research demonstrates that processing information with high-level construals can help an auditor curb a client’s aggressive reporting behavior (Backof et al. 2011).

Considering audit evidence with high-level construals should enable an auditor to increase the psychological distance between himself and the audit evidence. High-level construals can increase psychological distance because they allow an individual to view information in a more abstract form which increases objective processing of both positive and negative information (Trope and Liberman 2003; 2010; Fujita et al. 2007). The increased psychological distance should allow the auditor to remain in a deliberative mindset longer which will help maintain the auditor’s objectivity, thus promoting professional skepticism.

Considering audit evidence with low-level construals, however, could lead to directional, biased processing of the evidence, potentially inhibiting professional skepticism. Low-level construals focus on specific, detailed aspects of information making it harder for individuals to consider alternatives to that information (Trope and Liberman 2003; Fujita et al. 2007). Processing information with low-level construals would be detrimental to the audit process because such processing could enable the auditor to work towards a specific goal such as the goal of pleasing the client or confirming the client’s position rather than remain objective (Gollwitzer 1990; Gollwitzer and Bayer 1999; Freitas et al. 2004).

³ In an auditing context, an example of a high-level construal of auditing would be that auditors are providing assurance. An example of a low-level construal of auditing would be any of the specific procedures conducted during the course of the audit.

Prior psychology research describes mechanisms that can move individuals into an implemental mindset or otherwise decrease psychological distance. One of these mechanisms consists of having an individual generate specific examples from things like a category of objects or an intended plan of action (Taylor and Gollwitzer 1995; Fujita et al. 2006; Rim et al. 2009). An analog of this mechanism in audit practice is the documentation requirement. In the context of the audit of a complex estimate, auditors will document the specific reasons why they either confirmed the client's estimate or why they recommended an adjustment of the estimate.

If an auditor begins the documentation process early then the process could move the auditor into an implemental mindset before he has fully considered all of the available audit evidence. An implemental mindset does not foster objective processing of evidence and could exacerbate the problem of auditors tending to side with their clients to the extent that the remaining audit evidence is accumulated and processed with directional goals (such as pleasing the client) in mind (Gollwitzer 1990; Lundgren and Prislin 1998; Hackenbrack and Nelson 1998; Kadous et al. 2003; Montague 2010). Further, individuals in an implemental mindset have more trouble evaluating risk factors than do individuals in a deliberative mindset (Taylor and Gollwitzer 1995). Thus, the audit documentation process, in its current form, could be inhibiting both professional skepticism and an auditor's ability to make effective risk assessments.

I hypothesize that auditors in an implemental mindset will display lower levels of professional skepticism than will auditors in either a deliberative mindset or auditors that are not placed into a specific mindset. A finding that auditors in an implemental mindset display less professional skepticism than auditors not placed into a specific mindset will

serve as evidence that the documentation requirement potentially inhibits professional skepticism. I further hypothesize that auditors kept in a deliberative mindset will display the highest levels of professional skepticism.

1.2 Research Design

To test these hypotheses, I use an experiment designed to help illuminate the relation between psychological distance, mindsets and professional skepticism. I use a 1 x 3 between-participants design with the following three conditions: deliberative mindset condition, implemental mindset condition, and no documentation condition. My participants are auditors with experience auditing complex estimates.

The participants take part in a simulated audit of a complex estimate, namely a fair value estimate. Each participant receives background information on the client and the task and receives several pieces of evidence pertinent to the audit. Although the evidence items include positive (supporting the client's estimate), neutral, and negative (disconfirming the client's estimate) evidence, I balance the evidence such that the ratio is 1:2:2 of positive, neutral, and negative evidence items, respectively. The negative evidence collectively suggests that the client's estimate is at the upper end of a reasonable range of the estimate. This setting is one that should call for increased professional skepticism.

I ask participants in the deliberative mindset condition to broadly consider the evidence and write down a broad summary of the evidence. Consistent with prior research, broad consideration of the evidence should help the participants to maintain a deliberative mindset and increase the psychological distance between the participants and

the evidence (Fujita et al. 2006; Rim et al. 2009; Backof et al. 2011). I ask participants in the implemental mindset condition to consider and write down specific reasons why the client's estimate is either fairly stated or misstated. This act should serve to push the participants into an implemental mindset and decrease the psychological distance between the participants and the evidence (Fujita et al. 2006; Rim et al. 2009; Backof et al. 2011). I design the implemental mindset condition to mimic the audit practice of documenting specific reasons why an auditor chooses a particular action. Participants in the no documentation condition are not required to document evidence and therefore receive no instructions.

In theory and as codified in the accounting standards, auditors should be objective throughout the audit process. If objectivity is associated with the deliberative mindset then auditors should begin with a deliberative mindset and stay in that mindset for as long as possible. However, given the biases displayed by auditors described above coupled with the idea that the deliberative mindset can be bypassed (Gollwitzer 1990), I cannot be certain in which mindset participants will begin. With respect to the Heckhausen (1986) shown in Figure 1, I expect the experimental interventions to have poignantly different effects on an auditor's mindset. As shown in Figure 2, the instructions designed to invoke a deliberative mindset should theoretically increase the time an auditor remains in a deliberative mindset while the instructions designed to invoke an implemental mindset should increase the time an auditor is in an implemental mindset (at the cost of time in the deliberative mindset).⁴

⁴ I am grateful to Billy Brink for suggesting this figure.

I next ask the participants whether they wish to continue searching for additional evidence relative to the fair value audit. I consider additional searching to be consistent with increased professional skepticism. Participants that elect to continue searching receive new pieces of evidence that again suggest that the client's estimate is at the upper bound of a reasonable range for the fair value estimate. Upon viewing the new evidence, the participants are again subjected to their experimental manipulations and can decide to continue searching for new evidence.

After the participants decide they have viewed enough evidence, they are asked a series of questions regarding the task. The questions include an assessment of the risk of a material misstatement in the client's estimate and an indication of the likelihood of whether or not the participant would recommend an adjustment to the estimate. An increase in professional skepticism would be demonstrated by a) an increased level of searching for audit evidence; b) an increased assessment of risk; and/or c) an increase in the likelihood of recommending an audit adjustment.

The post-experimental questionnaire (PEQ) captures other important variables and possible covariates. The PEQ includes the 30-question Hurtt (2010) professional skepticism scale that is designed to capture trait professional skepticism.⁵ I also include a test derived from Fujita et al. (2006) that helps detect whether the participant is thinking in terms of high-level construals or low-level construals which will serve as evidence of the success or failure of the experimental manipulations.

⁵ Hurtt (2010) describes two types of professional skepticism: state and trait. Trait professional skepticism is a person's innate skeptical nature that remains constant over time. State professional skepticism can vary with each unique situation.

The focus of the analysis is on the level of professional skepticism displayed by participants in the deliberative mindset condition compared with the level displayed by participants in the other two conditions. I predict that a higher level of professional skepticism will be displayed by the deliberative mindset participants. Independent coders are used to help establish whether the participants' responses are indicative of high-level or low-level construals. I use the pattern displayed by the coding to see if I can determine when the shift to the implemental mindset occurs.⁶

Further, I contrast the level of professional skepticism displayed by participants in the implemental mindset condition with the level displayed by participants in the no documentation condition. I hypothesize that participants in the implemental mindset condition will display a lower level of professional skepticism. Such a result would potentially indicate that the current practice of documenting evidence inhibits professional skepticism. This finding combined with a finding that participants in the deliberative mindset condition displayed the highest level of professional skepticism would suggest that the current practice of documentation could be altered slightly to improve professional skepticism.

1.3 Results and Contribution

Consistent with my first hypothesis, I find that auditors given instructions designed to invoke a deliberative mindset display higher professional skepticism than do auditors given instructions designed to invoke an implemental mindset and auditors not

⁶ As discussed in the fourth section, responses indicative of high-level construals are coded as +1 while responses indicative of low-level construals are coded as -1. I theorize that a shift in the pattern from responses coded positive to responses coded negative marks the shift from the deliberative mindset to the implemental mindset. Unfortunately, I did not have enough data to report on this proposition. Please see section 4.7 for further details.

receiving documentation instructions. Auditors in the deliberative mindset condition spent more time searching for and reviewing audit evidence, spent more time on the study, assessed higher risks that management's estimate contains a material misstatement, and indicated a higher likelihood that they would recommend an adjustment of management's estimate than did auditors in the implemental mindset and no documentation conditions. Auditors in the deliberative mindset condition also conducted more searches for evidence than did auditors in the implemental mindset condition, but not more than participants in the no documentation condition. These results contribute to psychology and auditing theory by establishing a relation between psychological distance, mindsets, and professional skepticism.

My results can be useful for academics, regulators and practitioners in several different ways. First, I show that auditors should consider evidence with broad interpretations of the evidence rather than consider specific examples of audit evidence as required under the current auditing standards (PCAOB 2004). Second, my results can be useful to those seeking to create a judgment model that can aid auditors in their evaluations of complex client estimates (SEC 2008).

Third, I answer a call for research by Bratten et al. (2013) to examine task specific factors that can affect an auditor's ability to filter management bias in judgments related to complex estimates. I show that instructions designed to invoke a deliberative mindset and consider the "why" of the situation can assist an auditor in breaking through management bias and preferences to side with the client's estimate. My results suggest that auditors in a deliberative mindset condition will be more likely to consider audit

evidence collectively and better impound the negative information which some auditors fail to see (Griffith et al. 2012).

Additionally, I provide evidence supporting the problems discussed by Bratten et al. (2013) and Christensen et al. (2012) relating to the difficulty of the task of auditing complex estimates. Auditors in the deliberative mindset condition rated the experimental task as being significantly more difficult than auditors in the implemental mindset and no documentation conditions. I document a possible consequence of this difference in the finding that auditors in the deliberative mindset condition did not conduct more searches for evidence than auditors in the no documentation group despite showing higher professional skepticism through the other measures.

I suggest that auditors in the deliberative mindset condition might have ended their search for evidence prior to the maximum number of searches allowed because of the increase in perceived complexity. Auditors in the no documentation condition, despite being apparently less skeptical, could have continued their search for evidence simply because it was less cognitively taxing for them to do so since they did not have to document evidence. Future research can examine this conjecture that task complexity and professional skepticism are negatively related.

Fourth, this study continues the exploration of “state,” or situational, professional skepticism called for by Hurtt (2010). By linking professional skepticism with mindsets, I show that an auditor’s state professional skepticism can be heightened by prolonging the deliberative mindset. The auditors participating in my study do not significantly differ in their levels of trait, or permanent, professional skepticism; thus, according to

Hurt (2010), the differences in professional skepticism displayed by my auditor participants must be due to differences in their state professional skepticism. My results provide evidence that state professional skepticism can be altered through task-specific factors. The results also suggest that the deliberative mindset intervention can be useful in freeing auditors from the bias towards siding with their client (Hackenbrack and Nelson 1996; Peecher 1996; Haynes et al. 1998; Kadous et al. 2003) since it helps auditors maintain a more objective mindset when evaluating audit evidence.

Interestingly, I fail to show that auditors given instructions designed to invoke an implemental mindset display lower professional skepticism than do auditors not receiving documentation instructions. A possible reason for this lack of a finding is that auditors are currently required to consider and document evidence with specific, detailed responses (PCAOB 2004). Thus, even though auditors in the no documentation condition did not have to document evidence, they still considered the evidence as they would in a normal audit situation in which they would be required to document evidence. This result highlights the importance of changing the manner in which auditors consider and document audit evidence.

Finally, I find strong support for my third set of hypotheses that predicts a relation between the types of responses entered as audit documentation and auditor mindset. Auditors in the deliberative mindset condition entered broad, abstract responses a greater percentage of the time than did auditors in the implemental mindset condition. By extension, auditors in the implemental mindset condition entered specific, detailed responses a greater percentage of the time. This finding helps to solidify the relation between mindsets, psychological distance, and professional skepticism.

In terms of contribution, the results for Hypothesis 3 help open up the black box of professional skepticism. From these results we can potentially derive an *ex post* measure of professional skepticism that can be used to chart an auditor's level of professional skepticism at given points during an audit. For example, audit documentation can be examined to see what types of responses are entered during various stages of the audit, which can help reviewers and regulators establish whether the auditor was in a mindset conducive to professional skepticism during those stages. Future research will be useful in adapting the results of this paper into this potential measure and can be used to test the efficacy of the measure.

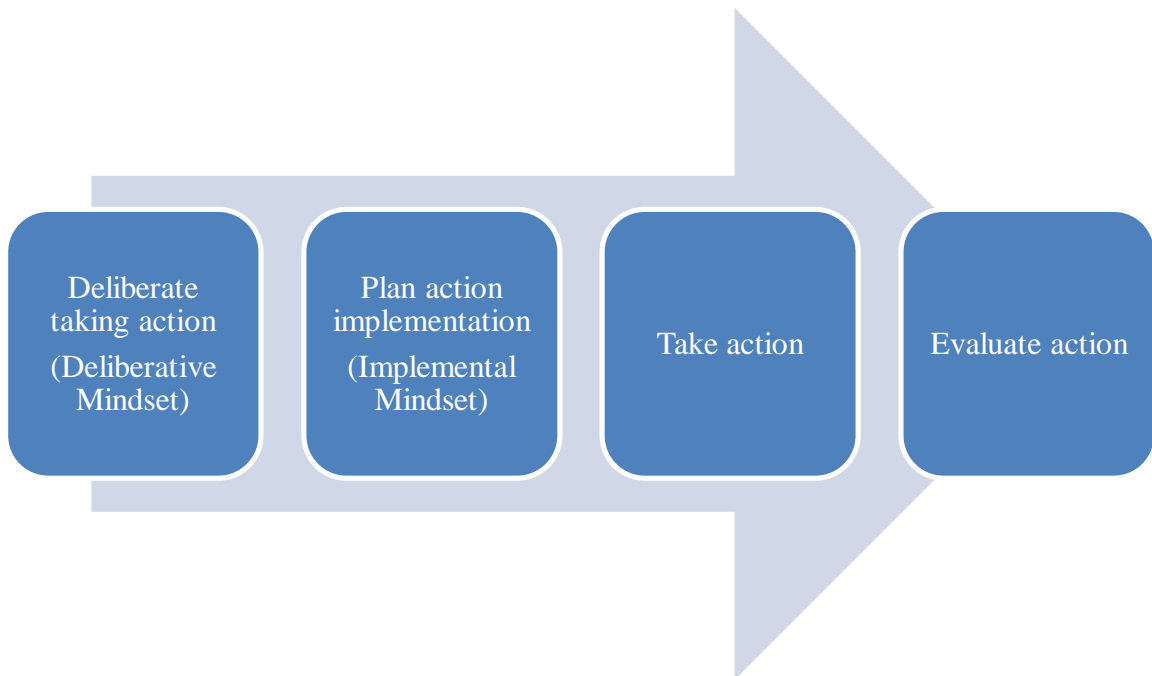
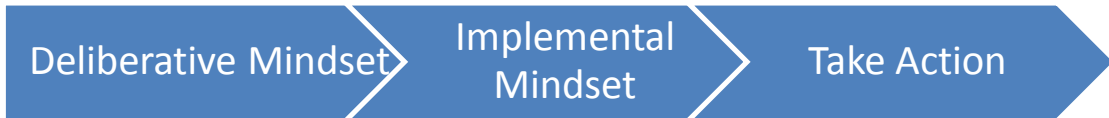


Figure 1 – Heckhausen's (1986) Self-Regulation Phases

No Documentation Condition



Deliberative Mindset Condition



Implemental Mindset Condition

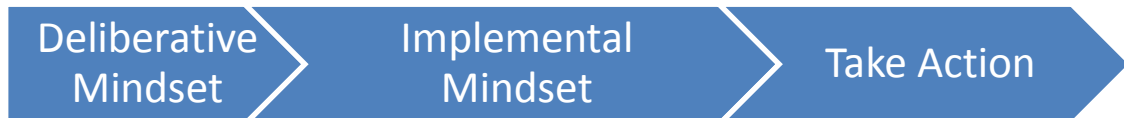


Figure 2 – Theoretical Effects of Documentation Instructions

2.0 BACKGROUND AND LITERATURE REVIEW

2.1 Professional Skepticism

Skepticism “is a manifestation of objectivity, holding no special concern for preconceived conclusions on any side of an issue” (Louwers et al. 2011, 16). According to the auditing standards, professional skepticism “is an attitude that includes a questioning mind and a critical assessment of audit evidence” (AU 230.07). The standard further describes that “the auditor neither assumes that management is dishonest nor assumes unquestioned honesty. In exercising professional skepticism, the auditor should not be satisfied with less than persuasive evidence because of a belief that management is honest” (AU 230.09).

Academics are not uniform in their interpretation of professional skepticism. Nelson (2009) recently reviewed the literature on professional skepticism and found that researchers interpret professional skepticism in at least two different ways. Some maintain that the standards promote a “neutral” perspective of skepticism. For example, Hurtt (2010, 151) defines professional skepticism as “a multi-dimensional construct that characterizes the propensity of an individual to defer concluding until the evidence provides sufficient support for one alternative/explanation over others.”

Other researchers promote a “presumptive doubt” interpretation of professional skepticism. For example, Shaub (1996) promotes the idea that skepticism is the opposite

of trust, or suspicion. Both Bell et al. (2005) and Nelson (2009) believe that relatively recent additions to the auditing standards, including SAS No. 57 (AU 342, Auditing Accounting Estimates) and SAS No. 99 (AU 316, Consideration of Fraud in a Financial Statement Audit), promote a “presumptive doubt” interpretation of professional skepticism because these standards reference fraud and management bias.

Regulators also appear to have adopted the “presumptive doubt” perspective. The SEC, and more specifically the Public Company Accounting Oversight Board (PCAOB), lists a lack of professional skepticism as a significant contributor to audit failures (Beasley et al. 2001; PCAOB 2008). The PCAOB recently summarized its observations gathered from inspection reports issued during the period 2004 through 2007. In this report the PCAOB notes “...in many cases, inadequate supervision and review and failures to apply appropriate professional skepticism were important factors that allowed deficiencies to occur” (PCAOB 2008, 20). Also of note, Anderson and Wolfe (2002) list a failure to maintain professional skepticism as a contributor to audit malpractice claims.

Nelson’s (2009) model of the determinants of professional skepticism in audit performance shows that evidential inputs affect skeptical judgments. Skeptical judgments in turn affect skeptical actions, with both judgments and actions affected by an auditor’s incentives, traits, knowledge, experience, and training. Skeptical action affects an auditor’s perception and interpretation of the accumulated audit evidence. The model is recursive in that the evidential outcome affects an auditor’s experience, which in turn affects evidential inputs.

Hurt (2010) suggests that there are two forms of professional skepticism: trait skepticism and state skepticism. Trait professional skepticism is a person's innate skeptical nature that is constant over time. State professional skepticism is situational and can be increased or decreased depending on an individual's perception of the situation. Both trait and state skepticism are important in forming an auditor's skeptical mindset, and this mindset leads to skeptical behavior. Certain moderating variables, such as engagement circumstances and client integrity, can affect both state skepticism and skeptical behavior. Hurt (2010) created a scale to measure trait professional skepticism, but at the current time no scale exists to measure state professional skepticism. Hurt comments: "Our understanding of professional skepticism will remain incomplete...until we begin to address the issues of *state* professional skepticism and skeptical behaviors" (2010, 165).

2.2 Mindset Theory

Mindset theory, as described in Gollwitzer (1990), illuminates the interaction between cognitive and motivational processes that takes place when individuals make decisions and take action. Of interest to the current study are the two mindsets entered into by individuals prior to making a decision: the deliberative mindset and the implemental mindset. These two preactional mindsets are important to the concept of professional skepticism because they affect how individuals process and interpret information (Gollwitzer 1990; Gollwitzer and Bayer 1999).

The first mindset individuals typically enter when making decisions is the deliberative mindset (Gollwitzer 1990). The deliberative mindset can be characterized by

impartiality and objectivity. While in the deliberative mindset, individuals remain receptive to information from all sources regardless of the content of that information (positive or negative) (Fujita et al. 2007). Psychology studies show that individuals in a deliberative mindset (relative to an implemental mindset) have increased memory retention and an increased ability to process information (Heckhausen and Gollwitzer 1987; Fujita et al. 2007).

Individuals will eventually enter an implemental mindset as they become closer to making a decision or taking an action. While in the implemental mindset, individuals choose a preferred goal or option and focus on information that will allow them to implement that goal (Gollwitzer 1990). In contrast with the deliberative mindset, the implemental mindset can be characterized by partiality and biased information processing (Fujita et al. 2007). Prior studies reveal that individuals in the implemental mindset become motivated to finish the task at hand more quickly and place greater value on information that supports a chosen goal (Gollwitzer and Kinney 1989; Harmon-Jones and Harmon-Jones 2002). In fact, Taylor and Gollwitzer (1995) show that individuals in the implemental mindset consider information that favors a preferred outcome five times more frequently than they consider information that disfavors the preferred outcome.

Given that the concepts of professional skepticism and objectivity are strongly linked (Louwers et al. 2011), I propose that professional skepticism would be strongest in the deliberative mindset and would be greatly reduced, if not eliminated, in the implemental mindset. This proposition is central to the current study because Gollwitzer (1990) claims that individuals can bypass the deliberative mindset and move right into the implemental mindset under certain circumstances. Backof et al. (2011) suggest that

one of these circumstances is when a preexisting bias or motivation exists such as an auditor's tendency to side with their client.

For example, Haynes et al. (1998) note that even experienced auditors have a tendency to follow their client's preferences with regards to inventory write-downs. When auditors have directional goals of pleasing their clients, their search for and processing of evidence can become biased as greater consideration is placed on evidence that favors the client's position (Lundgren and Prislin 1998; Hackenbrack and Nelson 1998; Kadous et al. 2003; Montague 2010). This effect on the search and processing of audit evidence is consistent with the effects noted above of being in an implemental mindset.

The tendency to side with a client's known position could be stronger in a complex estimate setting. For example, consider the audit (evaluation) of a fair value estimate. At times fair value can be easily determined by direct observations of market transactions of identical or similar items. Other times, however, the fair value can only be determined with valuation models that require inputs based on assumptions about the future (AICPA 2003). Regarding this latter type of estimation, the American Institute of Certified Public Accountants (AICPA) writes, "Those estimates of fair value are inherently imprecise. That is because, among other things, the estimates may be based on assumptions about future conditions, transactions, or events whose outcome is uncertain and will therefore be subject to change over time" (AICPA 2003, 2). I presume that the tendency to side with the client would be stronger in this situation because it is harder to challenge assumptions than it is to challenge concrete facts, and prior research shows that

auditors will react more favorably to clients when ambiguity exists (for examples, see Hackenbrack and Nelson 1996; Ng and Tan 2003).

Backof et al. (2011) describe the entry into the implemental mindset as the “point of no return” to objectivity. Thus, mechanisms that can prolong the deliberative mindset would be of interest to accounting researchers, practitioners, and regulators because the deliberative mindset can potentially help maintain an auditor’s objectivity as he or she searches for and reviews evidence during the audit of a complex estimate. Construal-level theory ties into mindset theory and illustrates mechanisms that can be used to prolong the deliberative mindset.

2.3 Construal-Level Theory

Construal-level theory (CLT) offers guidance on how individuals perceive the feasibility and desirability of a situation occurring in the near future versus the same situation occurring in the distant future. Although CLT initially focused on temporal distance and perceptions, the theory has broadened over the years to include other dimensions of distance collectively referred to as psychological distance (Trope and Liberman 2003). Psychological distance “is a subjective experience that something is close or far away from the self, here, and now” (Trope and Liberman 2010, 440). With this broader dimension, researchers now use CLT to describe how individuals make predictions and evaluate situations, how gambling preferences are affected, and how construals can affect interpersonal negotiation (Trope and Liberman 2003; 2010).

A construal, by definition, is an interpretation. There are two types of construals identified by CLT: low-level construals and high-level construals. According to Trope

and Liberman (2003), low-level construals can be described as complex and detailed whereas high-level construals can be described as simple and abstract. Low-level construals focus on the “how” of a situation while high-level construals focus on the “why” of a situation. Low-level construals decrease the psychological distance between an individual and what he or she is interpreting (Trope and Liberman 2010).

Trope and Liberman (2003) provide an illustration of the difference between the two levels of construals. Consider the act of conducting a research study. A low-level construal of this act is that the researcher is “testing a hypothesis,” or “entering the data collected this morning” (p. 405). In an auditing context, a low-level construal of the act of auditing a client’s financial statements would be a listing of any of the specific procedures performed during the audit such as interviewing the client, confirming accounts receivable, or documenting evidence. The low-level construals are more detailed, transactional interpretations of the act and focus on how to accomplish the act (Trope and Liberman 2003; Fujita et al. 2007).

A high-level construal of the act of conducting a research study is that the researcher is “advancing science” (Trope and Liberman 2003, 405). In an auditing context, a high-level construal of the act of auditing is that the auditors are providing assurance to financial statement users. Viewing the act through high-level construals makes representations of the event more abstract. This abstraction allows for easier assimilation of information because the representations become less ambiguous, more coherent, and more schematic (Trope and Liberman 2010). High-level construals focus on why the act is occurring or will occur and increase the psychological distance between an individual and the act (Trope and Liberman 2003; 2010; Fujita et al. 2007).

Prior research links the concepts of construals and psychological distance with mindset theory. Specifically, the deliberative mindset is associated with high-level construals and increased psychological distance while the implemental mindset is associated with low-level construals and decreased psychological distance (Fujita et al. 2006; Fujita et al. 2007; Rim et al. 2009). Given that the deliberative mindset is characterized by impartiality and objectivity and that increased psychological distance is associated with the deliberative mindset, an extension of CLT theory is that increased psychological distance should be associated with increased objectivity. Correspondingly, a decrease in psychological distance should be associated with a decrease in objectivity given the link between the implemental mindset (a mindset characterized by the biased processing of information), low-level construals, and decreased psychological distance (Fujita et al. 2007; Backof et al. 2011).

Backof et al. (2011) recently applied construal level theory to an auditing setting. The authors posit that thinking about an accounting treatment using high-level construals will allow auditors to consider the economic substance of the proposed accounting treatment rather than getting mired in the specific details of the treatment. They provide evidence that judgment frameworks based on construal-level theory can be effective in curbing an auditor's propensity to accept a client's aggressive accounting choice when the accounting standards are less precise.

The Backof et al. (2011) study shows how construal-level theory helps to curb a client's aggressive accounting choices but what remains unclear is how the theory affects professional skepticism. Generalization of the results to professional skepticism is difficult for two reasons. First, participants in the Backof et al. (2011) study provided

judgments based on a set of facts rather than on a set of assumptions as would be required in the audit of a complex estimate. In a GAAP setting, the set of facts should lead to a relatively clear auditor response that would not require the use of professional skepticism.⁷

A related second reason is that an important part of professional skepticism is “the gathering and objective evaluation of evidence” (AU 320.07). The search for audit evidence is omitted in the Backof et al. (2011) study. Objective evaluation of the set of facts provided by management in the study is not possible in their study because the participants had no method to corroborate or disconfirm the facts provided.

The current study contributes to the literature beyond the Backof et al. (2011) study by employing a setting that is more broadly applicable to professional skepticism, because it contains both an evidence search and evaluation process and requires judgments based on a set of assumptions rather than a set of facts. I also contribute to the literature by adding tests at the end of the experiment designed to show that participants considered the audit evidence with either high-level or low-level construals which will help express whether the participants’ mindsets worked as hypothesized.⁸

Prior psychology research demonstrates techniques used to create psychological distance. One of these techniques is to have individuals consider a set of objects.

⁷ For example, Backof et al. (2011) use a lease classification case. Under GAAP, the facts provided clearly indicate that the lease should be treated as an operating lease. Typically, no professional skepticism would be called for or used in this scenario. However, the authors note that the participants’ professional skepticism (presumably their state professional skepticism) may have been affected because the lease terms appeared to be structured by the client to meet the operating lease classification. Their wording of the facts could have affected professional skepticism unintentionally. In most lease classification settings the use of professional skepticism would not be necessary.

⁸ Backof et al. (2011) did not contain such tests nor did they provide sufficient detail for readers to determine whether their judgment frameworks worked because of a shift in construals/mindsets.

Researchers instruct participants to consider specific examples of items within the set in order to decrease psychological distance. Increased psychological distance is attained by having the participants think more broadly and categorically about the set of objects (Taylor and Gollwitzer 1995; Fujita et al. 2006; Rim et al. 2009).

Given the link between psychological distance and mindsets theorized above, manipulations that lead to increased psychological distance should help an individual maintain a deliberative mindset longer. Manipulations that decrease psychological distance could push an individual into an implemental mindset. Conversations with both current and previous auditors reveal that auditors document specific examples of evidence as they work towards completing an audit, a process that could be pushing auditors into an implemental mindset early in the audit process.

2.4 Audit Documentation

The auditing standards require significant documentation over the course of the audit including documentation of “the procedures performed, evidence obtained, and conclusions reached with respect to relevant financial statement assertions” (PCAOB 2004, section 6). Practitioners and researchers often refer to Auditing Standard No. 3 as the “not documented, not done” standard (Piercey 2011). Audit documentation can start early in the course of an audit.

The current audit documentation process is comparable to manipulations used in prior research (as described above) to place participants into an implemental mindset. Thus, the process could be inadvertently placing auditors into an implemental mindset early in the audit which would be detrimental to the auditor’s professional skepticism.

Taylor and Gollwitzer (1995) show that individuals in an implemental mindset perceive risk factors as being less likely to affect them than do individuals in a deliberative mindset. A similar finding in an audit context could be detrimental to the audit risk assessment process if risk factors are improperly weighed by auditors in an implemental mindset (i.e., the risk factors are ignored when they are, in fact, important to consider given the situation).

Piercey (2011) reveals another unintended consequence of the current audit documentation process. He shows that qualitative (as opposed to quantitative) risk assessments made as part of the audit documentation requirement can lead to audit conclusions more likely to favor the client. The documentation process could be exacerbating the auditor tendency to side with the client described earlier to the extent that auditors use their documentation to rationalize their decisions.

Payne and Ramsay (2008) reveal that preparing detailed workpapers to satisfy the documentation requirements has both positive and negative effects. On one hand the preparation of detailed workpapers improves error identification and pattern recognition. On the other hand, detailed workpapers require more time to prepare. The preparation of summary documentation memos (akin to high-level construals of the audit evidence) also leads to enhanced pattern recognition and increased memory, both of which should increase the rate and efficiency of information/evidence processing. This result is consistent with processing evidence with a deliberative mindset (Heckhausen and Gollwitzer 1987; Fujita et al. 2007).

In sum, detailed documentation of audit evidence as required under Auditing Standard No. 3 could have the unintended consequence of placing auditors in an implemental mindset. The implemental mindset is associated with biased processing of information which would be detrimental to professional skepticism and the audit process as a whole. This study will test whether a method of documentation consistent with the concepts of high-level construals, increased psychological distance, and the deliberative mindset can help increase professional skepticism.

3.0 HYPOTHESES DEVELOPMENT

3.1 Hypothesis 1

Professional skepticism is marked by objectivity (Louwers et al. 2011).

Professional skepticism can exist in the deliberative mindset because individuals in this mindset have not chosen a goal and process information impartially and objectively (Fujita et al. 2007). However, professional skepticism could be diminished, if not eliminated, in the implemental mindset as objectivity is eliminated and individuals focus on information that favors their chosen goal.

The previous section identifies two forces that can work against professional skepticism: the audit documentation process and the tendency for auditors to side with their clients. The current audit documentation process can work against professional skepticism because auditors document specific examples of evidence that support their overall audit recommendation. This type of documentation focuses on *how* the audited item is either fairly presented or materially misstated. Both considering specific examples and focusing on the *how* of a situation (low-level construals) are mechanisms used in prior psychology studies to decrease psychological distance (for examples, see Taylor and Gollwitzer 1995, Fujita et al. 2006, and Rim et al. 2009). Low-level construals and decreased psychological distance theoretically relate to the implemental mindset.

I posit that a change in the way auditors complete audit documentation could be effective in prolonging the deliberative mindset which should theoretically increase professional skepticism. The change will involve a switch from considering and documenting evidence in terms of low-level construals to considering and documenting evidence in terms of high-level construals. High-level construals help increase psychological distance, and both high-level construals and increased psychological distance theoretically relate to the deliberative mindset.

This strategy could prove ineffective, however, if an auditor's tendency to side with his or her client moves the auditor straight into the implemental mindset. Gollwitzer (1990) suggests that the deliberative mindset can be skipped. Auditors going into an audit of a complex estimate with the directional goal of siding with the client could already have their objectivity compromised and be in an implemental mindset before the audit starts (Backof et al. 2011). In this case, the question becomes whether the revision to the audit documentation process suggested in this paper can move an auditor back into a deliberative mindset or whether entry into the implemental mindset truly marks the "point of no return" to objectivity suggested by Backof et al. (2011).

Thinking in terms of high-level construals involves considering the *why* of a situation rather than the *how* (Trope and Liberman 2003; 2010). Further, thinking broadly and categorically about a situation rather than considering specific examples also marks thinking with high-level construals (Fujita et al. 2006; Trope and Liberman 2010). Thus, I predict that having auditors consider broad reasons *why* a complex estimate is either fairly presented or potentially misstated will help auditors remain in a deliberative

mindset longer, or push them back into a deliberative mindset from an implemental mindset, thus increasing the auditors' objectivity and professional skepticism.

H1a: Auditors receiving documentation instructions designed to invoke a deliberative mindset will display higher professional skepticism than will auditors receiving documentation instructions designed to invoke an implemental mindset.

H1b: Auditors receiving documentation instructions designed to invoke a deliberative mindset will display higher professional skepticism than will auditors not required to document evidence.

3.2 Hypothesis 2

To help gain further insight into which forces inhibit professional skepticism the most, I plan to contrast the professional skepticism displayed by auditors instructed to consider and document evidence in terms of low-level construals (akin to current audit practice) and auditors not receiving explicit documentation instructions. There are three potential outcomes, all of which I interpret here under the assumption that H1 holds. The first potential outcome is that auditors not receiving explicit documentation instructions display lower professional skepticism than will auditors required to consider and document evidence with low-level construals. This outcome would provide some evidence that the current audit documentation process actually helps counteract the auditor tendency to side with the client.

The second potential outcome is that there is not a significant difference in professional skepticism displayed between auditors considering and documenting evidence with low-level construals and auditors not receiving explicit documentation instructions. In this case there would be stronger evidence that the tendency to side with the client pushes an auditor into an implemental mindset early. The audit documentation

process would not cause further inhibition to professional skepticism because the move to the implemental process had already been completed.

The third potential outcome is that auditors required to consider and document the audit evidence with low-level construals will display lower professional skepticism than will auditors not receiving explicit documentation instructions. In this case the audit documentation process could be exacerbating any loss in professional skepticism related to the auditor tendency to side with the client. Alternatively, the audit documentation process could be driving the move to the implemental mindset if auditors' commitment to accuracy is greater than their commitment to pleasing the client.⁹ I consider this last potential outcome the most likely given Piercey's (2011) finding that qualitative audit documentation can exacerbate the auditor tendency to side with the client.

H2: Auditors receiving documentation instructions designed to invoke an implemental mindset will display lower professional skepticism than will auditors not required to document evidence.

3.3 Hypothesis 3

One way the shift between mindsets can be monitored is to examine when documentation changes from being broad and abstract (associated with a deliberative mindset) to specific and detailed (associated with an implemental mindset). The instructions designed to invoke a deliberative mindset instruct the user to think in terms of high-level construals. High-level construals are

⁹ Backof et al. (2011) provide some evidence that an auditor's commitment to accuracy is greater than his or her commitment to pleasing the client, but at least part of the difference is attributable to the standards regime in use. The commitment to accuracy appears to be much less under a GAAP regime than an IFRS regime.

characterized as being broad and abstract. Low-level construals, conversely, are characterized as being specific and detailed (Trope and Liberman 2003). The major difference between the two types of responses is that a specific, detailed response would mainly appear as a direct copy of an evidence item and would not consider the relation of that evidence item with other evidence. A broad, abstract response, on the other hand, would consider an evidence item in general terms and would likely consider that item's relation to other evidence collected. I predict that auditors receiving instructions designed to invoke a deliberative mindset will spend more time documenting evidence in a manner consistent with high-level construals (i.e., broad and abstract).

Mindset theory suggests that individuals will inevitably enter the implemental mindset as they become closer to making a decision or taking an action (Gollwitzer 1990). Thus, at some point, even individuals receiving instructions designed to invoke a deliberative mindset will shift mindsets, although there is no *ex ante* evidence of how and when this shift will occur. Regardless, I expect the experimental intervention to prolong the deliberative mindset and thus would expect a significantly higher ratio of broad, abstract responses to specific, detailed responses among participants in the deliberative mindset condition.

H3a: Auditors receiving documentation instructions designed to invoke a deliberative mindset will have a higher ratio of broad, abstract responses to specific, detailed responses than will auditors receiving documentation instructions designed to invoke an implemental mindset.

H3b: Auditors receiving documentation instructions designed to invoke an implemental mindset will have a higher ratio of specific, detailed responses to broad, abstract responses than will auditors receiving documentation instructions designed to invoke a deliberative mindset.

4.0 METHOD

4.1 Introduction

I employ an experiment to investigate whether specific mindsets can be invoked in auditors and what effect the invoked mindset will have on professional skepticism. I use a computerized experiment that has the experimental manipulations built into it. The use of a computerized instrument allows me to easily investigate elements important to the concept of professional skepticism such as the amount of time auditors spend in each section of the experiment and how many evidence searches they conduct. Further, the instrument captures textual responses from participants that, as will be discussed further, can be coded to allow for insights into the type of mindset displayed by each auditor. The unique design of the instrument is useful in determining when auditors shift mindsets and what role mindsets play in the auditors' decision-making processes.

4.2 Research Design

I use a 1 x 3 between-participants experimental design to test my hypotheses. The participants are 58 auditors from local, regional, national, and international accounting firms experienced in auditing complex estimates. The independent variable in this experiment is the type of mindset induced. The first experimental condition attempts to induce a deliberative mindset. The second experimental condition attempts to induce an implemental mindset. The third condition is a condition in which the participants do not

receive mindset/documentation instructions. The participants were randomly assigned to one of these three conditions.

4.3 Treatments/Independent Variable

The independent variable in this experiment is the type of mindset induced. I examine each of the two different preactional mindsets: the deliberative mindset and the implemental mindset. The participants in the deliberative mindset condition saw the following wording when considering audit evidence:

Thinking broadly about all of the evidence collectively, list reasons *why* management's estimate could be fairly presented.

Thinking broadly about all of the evidence collectively, list reasons *why* management's estimate could be materially misstated.

I draw the wording for this condition from prior construal-level theory literature which shows that thinking broadly about a situation and why the situation occurred involves using high-level construals which increases the psychological distance between a person and the situation and helps maintain a deliberative mindset longer (Fujita et al. 2004, 2006; Rim et al. 2009; Backof et al. 2011). The participants view these instructions both before and after considering the audit evidence produced by each of their searches.

The participants in the implemental mindset condition saw the following wording when considering audit evidence:

Thinking specifically about each evidence item, list reasons *how* management's estimate could be fairly presented.

Thinking specifically about each evidence item, list reasons *how* management's estimate could be materially misstated.

I draw the wording for this condition from prior construal-level theory literature which shows that thinking about a situation with specific details of the “how” of a situation involves using low-level construals which will decrease the psychological distance between a person and a situation and will push the person into an implemental mindset (Fujita et al. 2004, 2006; Rim et al. 2009; Backof et al. 2011). The participants in the no documentation condition did not receive any instructions regarding the evidence.

4.4 Dependent Variables

I capture five dependent variables that can be used to draw inferences about a participant’s professional skepticism. The use of multiple measures of professional skepticism should increase the robustness of the results. The first measure is a participant’s assessment of the likelihood that the client’s estimate contains a material misstatement. The second measure is a participant’s assessment of the likelihood that they would recommend an adjustment to the client’s estimate. Answers to both of these questions are captured on a Likert scale ranging from 1 to 10, with 1 equating to a low likelihood and 10 equating to a high likelihood. Higher likelihoods are representative of higher professional skepticism (skeptical judgment) in this task. I derive both of these questions from questions used in Montague (2010).

The remaining three dependent variables are captured via participants’ actions in the study and are used as measures of skeptical action. The third dependent variable captures the amount of time a participant spends in the search for and review of audit evidence phase of the task. The fourth dependent variable captures the total time a

participant spent on the study. The fifth dependent variable captures the number of searches for additional audit evidence conducted by each participant. I hypothesize that a greater number of searches is indicative of higher professional skepticism (skeptical action).¹⁰

During the experiment, participants in the experimental conditions provide textual responses relating to their documentation of the audit evidence. As indicated in section 4.3, these textual responses come from the audit documentation instructions that are specific to the deliberative and implemental mindsets, respectively. During the final judgments phase of the study, all participants provide textual responses to a question asking them to support the reasons for their judgments. I use independent coders to code each set of textual responses so that the responses can be analyzed and used to test Hypothesis 3. I describe the coding method in Section 4.7.

4.5 Covariates

I ask the participants several questions on a post-experimental questionnaire. The answers to these questions are examined as possible covariates. I begin by providing the participants with the 30-question Hurtt (2010) professional skepticism scale. Hurtt designed this scale to measure a participant's trait, or permanent, professional skepticism. Each of the questions is answered on a 6-point Likert scale ranging from 1 ("Strongly Disagree") to 6 ("Strongly Agree"). The range of possible scores on this scale is 30 to 180 with higher numbers indicating a higher degree of trait professional skepticism. In

¹⁰ The idea that the number of evidence searches is a measure of skeptical action is consistent with the description of skeptical action used in Hurtt et al. (2013). Support for the idea that the time variables can be considered measures of skeptical action can be found in Section 5.4.

other words, respondents with a high degree of trait professional skepticism are more skeptical by nature regardless of the circumstances.

Participants also respond to a series of eight questions drawn from Fujita et al. (2006) that allow me to measure each participant's construal level. The participants are asked to choose from one of two descriptions of an event. One of the descriptions is a broad, abstract description consistent with a high-level construal of the event. The other description is a detailed, specific description of the event. Consistent with Fujita et al. (2006), I give participants a score of -1 for each detailed, specific response and +1 for each broad, abstract response; thus, the range of possible responses is -8 to +8. Positive total scores are indicative that the participant is in the deliberative mindset while negative total scores suggest that the participant is in the implemental mindset.

I require participants to answer eleven questions about their thoughts and the experimental task. I provide the scale used to measure the responses to these questions in Figure 3. The first question asks the participants about the confidence they have in their assessment of the client's fair value estimate. Consistent with a limitation described in Montague (2010), auditors lacking confidence in their assessments could be less likely to recommend an adjustment to the client's estimate (thus potentially moderating responses to the adjustment likelihood dependent variable).

Another question asks the extent to which the participants trust the information provided by the client. Higher trust in the information could result in lower professional skepticism displayed by the participants. I also ask about the perceived riskiness of the client. A higher perceived client riskiness could lead to higher displays of professional

skepticism. Additionally, participants respond with their perceptions of the importance of the client. Auditors may be more likely to accept evidence and estimates provided by a client with higher importance and thus would respond with lower professional skepticism.

I ask seven questions that directly relate to perceptions of the audit task. The answers to these questions can potentially provide further information about the participants' choices and actions. One of these questions asks the participants about their perceived difficulty levels of the task. My interest here is to see whether the experimental interventions increase (or decrease) the perceived difficulty of the task. I also ask about the realism of the task to provide a measure of external validity.

The other five questions relate to the search for evidence portion of the experiment. First, I ask participants whether they believed the amount of time allocated by the audit manager to complete the task was reasonable. Second, I also ask whether the participants felt comfortable taking as many audit hours as necessary to complete the task. Third, I ask the participants whether they were motivated to finish the task in as few audit hours as possible.

Fourth, I ask whether the participants were satisfied that the evidence they collected provided them with a reasonable basis for forming their opinions. Finally, I asked whether the participants would have spent more time on the audit if they had more audit hours budgeted to the task. Each of these five questions can potentially provide insights into the reasons why the participants concluded their searches for audit evidence.

4.6 Task

I use a case adapted from Kohlbeck et al. (2009), as used in Montague (2010), which involves an audit of a client's intangible asset account (reacquired franchise rights). I selected this case for several reasons. First, the case is based on an actual transaction recorded by Krispy Kreme Doughnuts, Inc. Second, auditors commonly perform evaluations of fair value estimates of this type, which helps increase the generalizability of the results (Montague 2010). Third, the case involves a high amount of ambiguity which allows for the creation of a setting in which auditors should be skeptical.

Each participant began the experiment by reviewing background and financial information about the client, American Pizza Company (APC). The information included a description of the company and its franchising activities. A table presented information about the client's financial statements, including the value of its reacquired franchise rights accounts. Participants also read information about the client's accounting policies related to reacquired franchise rights.

The next screen of information contained information relevant to the experimental task. Each participant read that their firm has audited APC for over ten years and that the client is a significant source of revenue for the firm. The participants considered specific information about the reacquired franchise rights accounts and learned that the fair value of the account was greater than the book value of the account. The current screen also displayed management's assumptions used in generating the fair value estimate. The

participants had the opportunity to review this information as well as the client information at any time prior to entering in their final judgments.

After reviewing the client and task information, the participants began their search for evidence relating to the task. I created thirty pieces of evidence that related to the client and/or the client's reacquired franchise rights accounts. In order to create a skeptical setting, I generated 12 evidence items which collectively suggested that the client's estimate was overstated. I also generated six evidence items which collectively suggested that the client's estimate was fairly stated and 12 neutral evidence items which were largely irrelevant to the task. The incorporation of neutral evidence increases the external validity of the task since auditors often uncover evidence neither directly supports nor disconfirms the client's position.

I gave the list of evidence to several current and former audit managers who agreed that each item of evidence was appropriately labeled as either positive, negative or neutral evidence. I also gave an unlabeled, alphabetized list to three audit managers who rated the strength of each evidence item on a scale of -5 (Extremely negative) to +5 (Extremely positive), with 0 labeled as neutral. The average strength of the negative evidence was -2.53 (s.d. = 1.73). The average strength of the positive evidence was 2.17 (s.d. = 1.82) while the average strength of the neutral evidence was -0.08 (s.d. = 1.44). These ratings by the audit managers provide support for the claimed directionality of the evidence as being either positive, negative, or neutral.

The first screen of evidence presented to participants contained 10 evidence items: four negative items, four neutral items, and two positive items. Each successive

screen of evidence contained five evidence items. I maintained the same ratio of 2:2:1 (negative:neutral:positive) in each screen of evidence.

In order to reinforce the fact that continued searches for audit evidence are not costless, the computerized instrument displayed a time budget to all participants. The use of a time budget in this task is consistent with Montague (2010) and with audit practice. On the first screen of evidence, each participant learns that 70-percent of the current audit budget has been expended to generate the initial round of evidence. After learning the percent of audit hours used, each participant reads the following statement:

Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

Each successive search for evidence increments the percentage used by 10 percent. Each participant had the ability to continue searching up to four times. Participants using all available searches go over the budget by 10 percent (i.e., they would have used 110 percent of the audit hours allocated to the task by the audit manager). After each search, participants in the deliberative and implemental mindset conditions responded to the questions described in section 4.3.

Upon completion of their search, the participants reported 1) their perceived risk that the estimate is materially misstated; 2) an indication of where in a reasonable range the estimate would fall; and 3) their perceived likelihood that they would recommend an adjustment to the client's reacquired franchise rights account. Each participant also listed reasons supported the answers provided. The participants then completed a post-

experimental questionnaire that included manipulation checks, the Hurtt (2010) professional skepticism scale, and demographic questions.

Figure 4 graphically displays the phases of the experiment.

4.7 Data Coding

The participants in the deliberative mindset and implemental mindset conditions entered textual responses to the documentation questions described in section 4.3. The majority of the responses consisted of more than one sentence. I transferred each unique set of responses into a cell of a spreadsheet to keep the sentences together.

Two student assistants blind to my hypotheses served as independent coders. I sorted the responses alphabetically before giving them to the coders. I instructed the coders to consider each cell separately.

I told the coders that they needed to code each set of responses into one of two possible alternatives. A set of responses should be coded as -1 if the sentences collectively indicated that the respondent appeared to be thinking in specific, detailed terms. Alternatively, a set of responses should be coded as +1 if the sentences collectively indicated that the respondent appeared to be thinking in broad, abstract terms.

I gave the coders the following example to use in their coding. I asked them to consider that a respondent saw the following items of evidence: 1) The fruit is red; 2) The fruit is approximately six inches tall; and 3) The fruit has a stem on top. An example of specific, detailed thinking would be if the respondent simply relisted the evidence verbatim and did not draw any conclusions. On the other hand, an example of broad,

abstract thinking would be if the respondent commented on the evidence but also wrote something to the effect of “Considering the evidence collectively leads me to believe that this fruit could be an apple.” In other words, the respondent assimilated the evidence and drew a possible conclusion.

The coders returned their initial set of coding to me and I noted any differences between the codes. Landis and Koch (1977) suggest that a “moderate” level of agreement would be demonstrated with a Cohen’s Kappa coefficient between 0.41 and 0.60. The initial inter-rater agreement was low (Cohen’s Kappa coefficient of 0.304). As a result, I performed a recalibration of the instructions with the coders.

I next gave the coders a random subset of 100 of the textual responses. The level of agreement for the coding of these responses was much higher than the first attempt (Cohen’s Kappa coefficient of 0.616). According to Landis and Koch (1977), a Kappa coefficient between 0.61 and 0.80 would be indicative of “substantial” agreement. I then gave the coders a second subset of 100 items for which the level of agreement was moderate (Cohen’s Kappa coefficient of 0.537). The coders had a high level of agreement for the final subset of 93 responses (Cohen’s Kappa coefficient of 0.627). The overall Cohen’s Kappa Coefficient for the full set of responses was 0.580. The coders worked out all remaining differences, so the final version of the coding represents 100 percent agreement between the two coders.

Variable Name	Question/Definition
Independent Variable	
Mindset Condition	Deliberative mindset condition, Implemental mindset condition, or No documentation condition
Dependent Variables	
Assessment of Misstatement Risk	Given the evidence available in the case, assess the risk that management's fair value estimate of \$24,620,000 for the reacquired franchise rights in Pennsylvania is materially misstated. Likert Scale (1="Very Unlikely"; 10="Very Likely")
Assessment of the Likelihood of Recommending an Adjustment	Given the evidence available in the case, what is the likelihood that you would recommend an adjustment to the client's reported book value for the reacquired franchise rights in Pennsylvania (Book Value = \$22,770,000). Likert Scale (1="Very Unlikely"; 10="Very Likely")
Time Spent Searching For and Reviewing Audit Evidence	The number of minutes spent in the search for, review of, and documentation of audit evidence phases of the experiment.
Total Time Spent on the Study	The number of minutes from start of the experiment to the conclusion of the experiment
Number of Searches	The number of times a participant conducts a search for audit evidence beyond the initial round of evidence given to them.
Covariates	
Hurttt (2010) Professional Skepticism Score	Measured using Hurttt's (2010) professional skepticism scale which captures participant trait professional skepticism. Measure ranges from 30 – 180, with higher scores representing higher inherent professional skepticism.
Construal Level	Measured using exercise found in Fujita et al. (2006) which captures a participant's construal level and mindset. Measure ranges from -8 to +8, with lower scores representing low-level construals (implemental mindset) and higher scores representing high-level construals (deliberative mindset).
Confidence in Assessment	How confident do you feel about your assessment of management's fair value estimate for reacquired franchise rights in Pennsylvania? Likert Scale (1="Not Confident"; 10="Very Confident")
Trust Information Provided by Client	To what extent do you trust the information provided by your client? Likert Scale (1="Do not at all trust"; 10="Highly trust")
Perceived Riskiness of Client	Please provide your assessment of the riskiness of this client based solely on the information available to you in this case. Likert Scale (1="Not Risky at All"; 10="Very Risky")
Client Importance	American Pizza Company is an important client for my firm.

	Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")
Task Difficulty	How easy or difficult was this task for you to complete? Likert Scale (1="Very Difficult"; 10="Very Easy")
Reasonableness of Time Allocated by Audit Manager	I felt that the time allocated by the audit manager to complete this task was reasonable. Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")
Comfort Taking Time	I felt comfortable taking as many audit hours as necessary to complete this task. Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")
Motivation to Finish Task	I was motivated to finish this task in as few audit hours as possible. Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")
Satisfied that Evidence Collected is Reasonable to Form an Opinion	I am satisfied that the evidence I collected in this task was sufficient to have a reasonable basis for forming the opinions that I expressed in this study. Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")
Would Have Spent More Time if More Audit Hours Budgeted	I would have spent more time on the audit if my audit manager had budgeted more time for this task. Likert Scale (1="Strongly Disagree"; 10="Strongly Agree")

Figure 3 – Variable Definitions

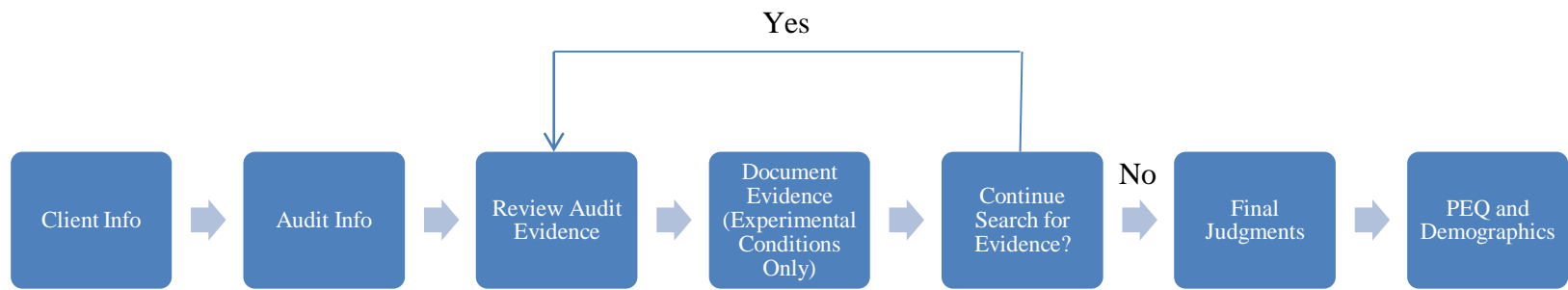


Figure 4 – Phases of Experiment

5.0 RESULTS

5.1 Analysis of Participant Demographic Information and Responses

Fifty-eight experienced auditors from six local, regional, national, and international public accounting firms participated in my study. Table 5.1 displays the demographic information both between experimental conditions and combined. The participants averaged 29.6 years of age with both gender types represented equally. The participants reported an average of 8.3 years of general work experience and 5.4 years of audit experience. Most of the participants reported being at the audit senior level (60.3 percent of the sample) and that they work for an international accounting firm (74.1 percent of the sample). Each participant completed the Hurtt professional skepticism questionnaire which measures a person's trait, or permanent, skepticism level. Participants averaged a score of 129.71 based on their responses. Skepticism scores did not significantly vary between experimental conditions (p -value of 0.204).

I required that participants have at least some experience auditing fair value estimates in order to take part in this study. However, six participants (10.3-percent of the sample) reported having no such experience. I checked for differences in the responses of these six participants and found that the participants reporting no fair value auditing experience reported a significantly lower number of evidence searches than participants with fair value auditing experience (means of 1.0 and 2.31 searches, respectively). The responses to the other dependent variables did not differ between

groups. The results discussed in this chapter do not differ if these participants are removed from the sample.

Each participant completed a post-experimental questionnaire that contained several questions. All of the questions were answered on ten-point scales numbered from one to 10. Table 5.2 provides information about participant responses to these questions. Overall the participants expressed confidence in their assessments of the client's fair value estimate ($\bar{x} = 7.40$ on a scale where 1 = "Not Confident" and 10 = "Very Confident"). The participants agreed that the client is an important client to the firm ($\bar{x} = 8.95$ on a scale where 1 = "Strongly Disagree" and 10 = "Strongly Agree"). The participants further agreed that the experimental task is a realistic example of an audit task ($\bar{x} = 7.59$ on a scale where 1 = "Strongly Disagree" and 10 = "Strongly Agree").

The participants disagreed about other aspects of the experimental task. Participants in the deliberative mindset condition rated the task as significantly more difficult ($\bar{x} = 5.95$ on a scale where 1 = "Very Difficult" and 10 = "Very Easy") than did participants in the implemental mindset condition ($\bar{x} = 7.21$) and the no documentation condition ($\bar{x} = 7.40$), with a p -value for the difference of 0.049. A possible reason for this difference is that participants in the deliberative mindset condition had to consider the evidence collectively rather than singularly which could have been more cognitively taxing.

The participants also disagreed about the appropriateness of the time allocated to the task. I first asked participants whether they felt that the time allocated by the audit manager to complete the task was reasonable. Participants in the deliberative mindset

condition indicated that they felt that the time allocated to the task by the audit manager was significantly less reasonable ($\bar{x} = 5.05$ on a scale where 1 = “Strongly Disagree” and 10 = “Strongly Agree”) than did participants in the implemental mindset condition ($\bar{x} = 7.37$) and the no documentation condition ($\bar{x} = 6.70$), with a p -value for the difference of 0.008.

I also asked participants if they would have spent more time on the audit if the audit manager had budgeted more time for the task. Participants in the deliberative mindset condition indicated significantly higher agreement with this question ($\bar{x} = 6.84$ on a scale where 1 = “Strongly Disagree” and 10 = “Strongly Agree”) than did participants in the implemental mindset condition ($\bar{x} = 4.63$) and the no documentation condition ($\bar{x} = 4.95$), with a p -value for the difference of 0.017. The probable reason for these differences can be demonstrated by observing the number of evidence searches conducted between conditions. Participants in the deliberative mindset condition executed the maximum number of evidence searches nine times while participants in the other two conditions executed the maximum number of searches only four times each. In contrast, participants in the implemental mindset condition finished the task after the first evidence search eight times while participants in the deliberative mindset and no documentation conditions finished after the first search only three times combined. Figure 5 graphically displays a breakdown of the number of additional searches by experimental condition.

Although each of these variables that differs between conditions will be analyzed as potential covariates, there are two additional variables that have a sound theoretical basis for covarying with the dependent variables. First, I asked participants the extent

that they trusted the information provided by the client. On a scale of 1 to 10 (1 = “Do Not Trust at All” and 10 = “Highly Trust”), participants in the deliberative mindset condition claimed that they trusted the client’s information less ($\bar{x} = 4.16$) than did participants in the implemental mindset condition ($\bar{x} = 7.11$) and the no documentation condition ($\bar{x} = 6.25$), with a p -value for the difference of 0.000. This finding is consistent with the *ex ante* notion that trust would be lower in someone who is more skeptical.

Second, I asked participants to rate the overall riskiness of the client using a ten-point scale where 1 is set to “Not Risky at All” and 10 is set to “Very Risky.” Participants in the implemental mindset condition reported the lowest assessments of risk ($\bar{x} = 4.05$). The participants in the deliberative mindset condition reported the highest assessments of risk ($\bar{x} = 7.74$). The p -value for the difference in conditions is 0.000. This difference is consistent with Taylor and Gollwitzer’s (1995) finding that individuals in a deliberative mindset better attend to risk factors.

5.2 Tests for Differences in Testing Location

I collected responses from the auditors in person whenever possible. However, 28 participants (48.3-percent of the participants) completed the study on their own time due to firm requests or logistical problems.¹¹ I test for differences in demographic variables, dependent variables, and potential covariates between these two groups. These differences are displayed in Table 5.3. I find that there are significant differences between the groups in two of the demographic variables: the type of firm for which they are employed and the number of years of general work experience.

¹¹ For example, I attempted to conduct the study in person at one firm but found that the firm’s internet security suite blocked participant access to my study’s website. These participants had to complete the study on their own time and on their own computers.

The first difference is not surprising because I conducted the study onsite with all the smaller accounting firms (local, regional, and national firms) represented in my sample and only some of the largest accounting firms (international firms). In contrast, all 28 participants who completed the study on their own represented large, international accounting firms. The difference in general work experience is likely attributable to outliers in this variable. Of the 14 participants noting that they had greater than 10 years of general work experience, only three completed the study on their own time. Further, two participants that completed the study onsite reported general work experience of 25 and 30 years, respectively.

I include testing location as a control variable in my supplemental analyses. The results do not differ when this variable is included in any of the tests discussed below.

5.3 Discussion of the Efficacy of the Experimental Manipulations

A key aspect of this paper is that there is a relation between high-level construals, the deliberative mindset, and increased psychological distance and professional skepticism. Further, there should be a relation between low-level construals, the implemental mindset, and decreased psychological distance and professional skepticism. I use procedures and instructions from prior construal-level theory literature that have been designed to push an individual into a specific mindset.

I draw the wording for the deliberative mindset condition from prior construal-level theory literature which shows that thinking broadly about a situation and why the situation occurred involves using high-level construals which increases the psychological distance between a person and the situation and helps maintain a deliberative mindset

longer (Fujita et al. 2004, 2006; Rim et al. 2009; Backof et al. 2011). The participants in the deliberative mindset condition saw the following wording when considering audit evidence:

Thinking broadly about all of the evidence collectively, list reasons *why* management's estimate could be fairly presented.

Thinking broadly about all of the evidence collectively, list reasons *why* management's estimate could be materially misstated.

The participants then entered their thoughts and reasons into separate textboxes for each question.

I draw the wording for the implemental mindset condition from prior construal-level theory literature which shows that thinking about a situation with specific details of the “how” of a situation involves using low-level construals which will decrease the psychological distance between a person and a situation and will push the person into an implemental mindset (Fujita et al. 2004, 2006; Rim et al. 2009; Backof et al. 2011). The participants in the implemental mindset condition saw the following wording when considering audit evidence:

Thinking specifically about each evidence item, list reasons *how* management's estimate could be fairly presented.

Thinking specifically about each evidence item, list reasons *how* management's estimate could be materially misstated.

The participants then entered their thoughts and reasons into separate textboxes for each question.

In order to test the efficacy of these manipulations, participants completed an exercise derived from Fujita, Trope, Liberman, and Levin-Sagi (2006) that helps capture

the participant's mindset.¹² The participants considered eight situations and chose a description of the situation from one of two choices. One choice contained a high-level interpretation (construal) of the situation while the other contained a low-level interpretation (construal) of the situation. Consistent with Fujita et al. (2006), I scored each response as -1 if the participant chose the low-level interpretation and +1 if the participant chose the high-level interpretation. The scores could thus range from a minimum of -8 to a maximum of +8 with negative scores indicating an implemental mindset and positive scores indicating a deliberative mindset.

Table 5.4 shows the breakdown of construal level by experimental condition. Participants in the deliberative mindset condition had, on average, high, positive scores ($\bar{x} = 6.11$) which implies success with the deliberative mindset manipulation. I find further evidence of the manipulation's success in an examination of the minimum and maximum scores for participants in this condition. The minimum score of any participant in the deliberative mindset condition was zero which suggests that no participant in this condition chose more low-level responses than high-level responses.

Participants in the implemental mindset condition had, on average, moderately negative scores ($\bar{x} = -2.42$) which is evidence of the success of the implemental mindset manipulation. Participants in the no documentation condition averaged slightly positive scores ($\bar{x} = 1.40$) indicating that they might have been on boundary of the two mindsets. A one-way analysis of variance (ANOVA) indicates that the difference in scores between conditions is significant (p -value = 0.000). Planned contrasts reveal that the construal

¹² The Fujita et al. (2006) exercise has been used as a measure of mindset in a number of studies, including Meyvis et al. (2012), Alter et al. (2010), and Schmeichel and Vohs (2009).

scores are significantly higher in the deliberative mindset condition than in both the implemental mindset condition (p -value = 0.000) and the no documentation condition (p -value = 0.000).¹³ The contrasts also show that the construal scores are significantly lower in the implemental mindset condition than in the no documentation condition (p -value = 0.008). Collectively, I take these results as indicators of the success of the experimental manipulations.

5.4 Descriptive Statistics Regarding Dependent Variables and Potential Covariates

The study contains several dependent variables that can be used to make inferences about auditors' professional skepticism and how the level of skepticism affects auditor judgment. I use five primary measures of professional skepticism. Consistent with Montague (2010), two of these measures, assessments of the risk that the client's estimate is materially misstated and assessments of the likelihood that the participant would recommend an adjustment of the client's estimate, can be considered measures of skeptical judgment. Following the definition of skeptical action used by Hurtt et al. (2013), I measure skeptical action through the number of times participants searched for additional audit evidence. I posit that the time spent searching for and reviewing evidence and the total time spent on the study are also viable measures of skeptical action. Table 5.5 displays univariate statistics for each of these measures.

The first dependent variable is the participants' assessments of the risk that the client's estimate is materially misstated. The participants entered their responses on a scale of 1 to 10 where 1 signified "Very Unlikely" and 10 signified "Very Likely." As

¹³ The results of a Levene's test reveal that the variances between these variables are not homogeneous. Therefore, I use the results of the planned contrasts that do not assume equal variances. All p -values are halved because the contrasts are one-tailed.

shown in Table 5.5, participants in the deliberative mindset believed the risk to be higher ($\bar{x} = 7.53$) than did their counterparts in the implemental mindset ($\bar{x} = 4.00$) and no documentation ($\bar{x} = 4.25$) conditions, respectively.

The second dependent variable is the participants' assessments of the likelihood that they would recommend an adjustment to the client's estimate. The participants entered their responses on a scale of 1 to 10 where 1 signified "Very Unlikely" and 10 signified "Very Likely." Participants in the deliberative mindset condition indicated the highest likelihood of recommending an adjustment ($\bar{x} = 6.74$). The participants in the implemental mindset condition indicated the lowest likelihood of recommending an adjustment ($\bar{x} = 3.16$).

The third dependent variable is the time spent on the search for and review of audit evidence portion of the task. As shown in Table 5.5, participants in the deliberative mindset condition spent the most time searching for evidence with an average of 16.6 minutes per participant. Participants in the implemental mindset condition spent the second most time searching for evidence with an average of 11.2 minutes per participant. Participants in the no documentation condition spent the least amount of time searching for evidence, with an average of 5.1 minutes per participant.

On the surface it may seem strange that participants in the no documentation condition spent the least amount of time searching ($\bar{x} = 5.1$ minutes per participant) even though they conducted about the same number of searches as participants in the deliberative mindset condition. This apparent oddity is easily explained by returning to the description of the experimental task. Participants in the no documentation condition

did not have to enter their thoughts and/or reasons for why the client's estimate could be fairly presented or materially misstated. Not having the documentation requirement likely resulted in faster searches for and reviews of evidence.

The fourth dependent variable is the total time spent on the entire study. Once again, participants in the deliberative mindset condition spent the most time out of all the conditions with an average of 26.7 minutes per participant. Participants in the implemental mindset condition averaged 19.1 minutes per participant while participants in the no documentation condition spent the least amount of time on the study ($\bar{x} = 17.6$ minutes per participant) likely due to the reasons described above. The data show, however, that the difference in time spent between participants in the implemental mindset condition and participants in the no documentation condition decreased with this measure. One possible reason is that participants in the no documentation condition had to spend more time formulating their thoughts after the search portion of the task while participants in the other conditions had been formulating their thoughts during the search portion of the task. I find evidence for this reason in the fact that participants in the no documentation condition spent almost three minutes more, on average, responding to the dependent variable questions than did participants in the implemental mindset condition, a difference that is statistically significant (p -value of 0.000, untabulated).

The final dependent variable is the number of searches for audit evidence conducted by each participant. As discussed in Section 5.1, participants in the deliberative mindset, on average, conducted the greatest number of evidence searches ($\bar{x} = 2.63$). Participants in the no documentation condition conducted slightly less searches

on average ($\bar{x} = 2.50$), while participants in the implemental mindset condition conducted the fewest number of searches ($\bar{x} = 1.37$).

Table 5.6 shows the correlations between the dependent variables. Not surprisingly, participant responses for the risk that the client's estimate is materially misstated and responses for the likelihood of recommending an adjustment to the client's estimate are highly correlated (Pearson correlation coefficient = 0.844). Likewise, the time spent searching for audit evidence and the total time spent on the study are highly correlated (Pearson correlation coefficient = 0.926). The high correlations between the dependent variables suggest that a multivariate approach such as MANOVA should be considered for testing the hypotheses. Also, the high correlations between the number of searches variable and both the search time variable (Pearson correlation coefficient = 0.554) and the total time variable (Pearson correlation coefficient = 0.612) support my claim that the time variables can be considered measures of skeptical action.¹⁴

I next examine the correlations between the dependent variables and potential covariates (described in Section 5.1). Table 5.7 displays these correlations. A few covariates are highly correlated with the dependent variables, including trust in the information provided by the client, the belief that the time allocated by the audit manager was reasonable, and perceptions of the client's riskiness.

In order to be considered as a possible covariate in an analysis of covariance (ANCOVA), the potential covariate should be highly correlated with the dependent

¹⁴ A factor analysis provides further support for this claim. The search time, total time, and number of searches variables all load onto the same factor, with loadings of 0.948, 0.965, and 0.754, respectively. The assessment of misstatement risk and the likelihood of an adjustment variables load onto a second factor, with loadings of 0.946 and 0.967, respectively.

variable(s) but not correlated with the independent variable(s) because this correlation would be a violation of the assumption of homogeneity of regression (Huitema 2011). Table 5.7 shows that the three covariates mentioned above are significantly correlated with the independent variable. Thus, I will not include these variables in the subsequent analysis.¹⁵

I also test for possible effects of including demographic variables in the analysis. I first examine the correlations between the dependent variables and the demographic variables. None of the demographic variables are significantly correlated with the measures of skeptical judgment (risk of material misstatement in the estimate and the likelihood of recommending an adjustment).

I do note significant correlations between some of the demographic variables and the measures of skeptical action. I find that the number of additional searches for audit evidence variable is significantly correlated with the number of months of work experience (Pearson correlation coefficient = 0.307), a dummy variable that equals one if the participant has experience auditing fair values (Pearson correlation coefficient = 0.268), the type of firm which employs the participant (Pearson correlation coefficient = -0.271), and the participant's position (Pearson correlation coefficient = 0.276). The time spent searching for and processing audit evidence dependent variable is significantly correlated with the number of months of work experience ((Pearson correlation coefficient = 0.280) and the type of firm which employs the participant (Pearson correlation coefficient = -0.339). The total time spent on the experiment dependent

¹⁵ I also examined interactions between the covariates and the independent variable. The interactions are significant which further suggests that the inclusion of these covariates in an ANCOVA model would violate the homogeneity of regression assumption.

variable is significantly associated with gender (Pearson correlation coefficient = -0.270) suggesting that females spent less time), the number of months of work experience (Pearson correlation coefficient = 0.372), the number of months of audit experience (Pearson correlation coefficient = 0.318) and the type of firm which employs the participant (Pearson correlation coefficient = -0.410).¹⁶ The inclusion of these variables, either separately or collectively, does not significantly affect the results described below or the inferences drawn from those results.

5.5 Assumption Testing

5.5.1 Assumptions for Hypotheses 1 and 2

I consider the use of multivariate analysis of variance (MANOVA) for Hypotheses 1 and 2 because of the high correlations between the dependent variables noted in the previous section. I plan to combine the two time variables (time spent searching for and reviewing audit evidence and total time spent on the study) and the misstatement risk and likelihood of recommending an adjustment variables, respectively, given the high correlations between the variables within each pair.¹⁷ MANOVA effectively combines two or more dependent variables and creates a composite mean based on the variables. These composite means, also known as mean vectors or centroids, are then compared with one another in an analysis similar to a univariate ANOVA (Sheskin 2004)

¹⁶ The variable which captures the type of firm which employs the participant is coded zero for local accounting firms, one for regional accounting firms, two for national accounting firms, and three for international accounting firms. Interestingly, these correlations suggest that larger accounting firms are associated with lower skeptical actions

¹⁷ I do not include the number of searches variable with the time variables because, as will be discussed in Section 5.6.1, there are problems interpreting the time variables between the mindset conditions and the no documentation condition. The inclusion of the number of searches variable in the MANOVA analysis using the time variables does not change the inferences drawn from the results.

MANOVA is superior to ANOVA when two or more dependent variables are highly correlated for several reasons. First, MANOVA avoids the inflated Type I error rate that can result from employing multiple tests of the dependent variables separately. Second, MANOVA takes the correlations into account when computing the MANOVA test statistic. Third, MANOVA has more power to detect a significant effect based on the composite mean than does ANOVA in detecting effects of the singular dependent variables (Sheskin 2004; Stevens 1996).

MANOVA has five assumptions that should be met. First, the dependent variables should be normally distributed. Second, the variances and covariances of the dependent variables should be homogeneous (homogeneity of the variance-covariance matrices). Third, the observations must be independent. Fourth, there should be linear relationships between all pairs of dependent variables and potential covariates. Finally, cell sizes should be approximately equal (Finch 2005; Stevens 1996).

One of the assumptions of multivariate analysis is that the data are normally distributed. I test for normality using two statistical tests: Kolmogorov-Smirnov (with Lilliefors significance correction) and Shapiro-Wilk. Nonsignificant results from these tests suggest that the data are normally distributed. Table 5.8 displays these results which suggest that all five of my dependent variables are not normally distributed. Recent studies suggest, however, that ANOVA and, by extension, MANOVA are robust to violations of the normal distribution assumption and can outperform nonparametric versions of ANOVA when only this assumption is violated and the non-normality is caused by skewness rather than by outliers (Schmider et al. 2010; Finch 2005; Stevens 1996).

I begin searching for possible outliers by examining histograms and boxplots of the data. Neither the boxplots nor the histograms for the number of evidence searches, misstatement risk, or adjustment likelihood variables indicate potential outliers. My visual interpretation is confirmed by examining Cook's D scores and leverage scores as well as by applying the outlier labeling rule described in Hoaglin et al. (1986).

Visual analysis of the histograms for time spent during the search phase of the study and for the total time spent on the study reveals that the data are heavily skewed to the left and that there could be one outlier. Neither of the boxplots suggests that this observation could be an outlier and an examination of Cook's D scores and leverage scores confirms this suggestion. I also apply the outlier labeling rule because the data are not normally distributed (Hoaglin et al. 1986). Applying this rule does not suggest that there is an influential outlier in the data. I conclude that the use of MANOVA is still appropriate provided that none of the other assumptions are violated.

I employ two tests of the homogeneity of the dependent variables' variance-covariance matrices: Box's test of equality of covariance matrices and Levene's test of equality of error variances. Box's test produces a statistic based on the combination of the correlated dependent variables while Levene's test produces a statistic based on the individual dependent variables.

Panel A of Table 5.9 shows the results of the Box's tests for the pairings of the time variables and the risk/likelihood variables. Both results suggest that the null hypothesis of equal observed covariance matrices of the dependent variables across

conditions should be rejected. Thus, it appears that the homogeneity of the variance-covariance matrices will also be violated.

The impact of this violation is minimal in MANOVA when cell sizes are approximately equal (Stevens 1996). However, additional evidence of this violation can be found in Panel B of Table 5.9. The Levene's tests suggest that there could be equal error variances in the risk of material misstatement and likelihood of recommending an adjustment dependent variables; however, the statistical significance of the time variables reveals that the error variances are not likely to be equal across conditions in those variables.

MANOVA assumes that each of the observations is independent (Finch 2005). I achieve independence by randomly assigning participants to the experimental conditions. MANOVA also assumes that there is a linear relation between the proposed pairings of the dependent variables. I confirm the linearity of both sets of proposed dependent variables couplings (the time variables and the risk/likelihood variables) through visual analysis of scatterplots. Further evidence of linearity is provided in the high correlations between these variables noted in section 5.4. Finally, my cell sizes are approximately equal (19, 19, and 20).

In conclusion, the data violate two of the MANOVA assumptions: the assumption of normality and the assumption of homogeneity of the variance-covariance matrices. Finch (2005) shows that nonparametric MANOVA outperforms parametric MANOVA when both the normality and the homogeneity assumptions are not met. Specifically,

nonparametric MANOVA has a lower Type I error rate and higher power than its parametric equivalent.

Following this finding, I conclude that nonparametric MANOVA is the appropriate statistical method for analyzing the dependent variables that are highly correlated. The Kruskal-Wallis test is a nonparametric test used for ANOVA that can also be used for MANOVA (Finch 2005). I will run planned contrasts to test for specific differences between experimental conditions. I will use a median test and individual ANOVAs (parametric and nonparametric) to test the robustness of the nonparametric MANOVA. Finally, I will include any covariate that has a correlation of greater than $|0.400|$ in supplemental analyses.

As discussed earlier, I consider the number of searches for audit evidence variable in a separate analysis because of possible interpretation difficulties that may arise from comingling the time variables with this variable. In order to further test Hypotheses 1 and 2, I plan to use a one-way ANOVA using the number of searches variable. The assumptions of ANOVA are largely the same as the assumptions for MANOVA.

As shown previously in Table 5.8, the data in the number of searches dependent variable are not normally distributed; however, ANOVA is robust to violations of the normality assumptions (Finch 2005; Stevens 1996). Panel B of Table 5.9 shows a nonsignificant value for the Levene's test which indicates that I should fail to reject the null hypothesis that the error variances are equal across conditions in this variable. Finally, I achieve independence of the observations by randomly assigning participants to the experimental conditions. I conclude that a one-way ANOVA is the appropriate

statistical test for this variable and will supplement this test with planned contrasts between experimental conditions.

5.5.2. Assumptions for Hypothesis 3

I examine the coding of the textual responses entered by the participants in my analysis of Hypothesis 3. Recall that the independent coders assigned a value of +1 if a set of responses indicated broad, abstract thinking (consistent with the deliberative mindset and high-level construals). The coders assigned a value of -1 if a set of responses indicated specific, detailed thinking (indicative of the implemental mindset and low-level construals).

Hypotheses 3a and 3b predict a greater likelihood of one type of response over another between experimental conditions. Hypothesis 4a predicts that participants in the deliberative mindset condition will be more likely to enter broad, abstract responses than will participants in the implemental mindset condition. Similarly, Hypothesis 4b predicts that participants in the implemental mindset condition will be more likely to enter specific, detailed responses than will participants in the deliberative mindset condition.¹⁸

Given that I collect multiple responses from each participant over time and that the coding is bivariate, the appropriate statistical test would appear to be repeated measures logistic regression. Each participant had the *option* of continuing the search for evidence up to four times, however, which lead to a nonuniform number of responses

¹⁸ Note that I do not include the no documentation participants in this analysis. Participants in the no documentation condition only entered one set of textual responses after concluding their search and responding to the initial dependent variable questions. Mindset theory would suggest that individuals at this stage of the decision process will have already entered the implemental mindset. Thus, the responses entered here cannot be directly compared with responses entered in the predecisional portion of the task. I reveal the types of responses given by these participants in a later section but do not include these responses in the statistical analysis.

between participants. The number of responses range from one (indicating a participant that did not conduct any additional searches) to five (indicating a participant that conducted the maximum number of searches). As previously shown in Table 5.5, participants varied greatly in the number of searches they conducted. The nonuniform number of repeated measures precludes the use of repeated measures logistic regression.

I next examine the raw number of responses of each type entered by participants in each condition. Panel A of Table 5.10 reveals the number of (percentage of) responses of each type entered by participants collectively in each condition.¹⁹ Note that the total number of responses is different between the experimental conditions. As a result, I cannot test for differences using the raw numbers.

I convert the raw numbers into proportions (percentages). The conversion of the raw numbers into proportions helps standardize the data to make analysis between the two conditions easier. These proportions, displayed in Panel B of Table 5.10, are the proportions (standard deviations) of each type of response *by participant* calculated by taking the number of each type of response (broad and abstract or detailed and specific) entered by each participant and dividing that number by the total number of responses entered by each participant. In other words, if a participant entered three responses coded as +1, -1, and +1, respectively, that participant would be said to have a broad, abstract proportion of 66.7 percent and a detailed, specific proportion of 33.3 percent.

A paired *t*-test is inappropriate for this analysis because the proportion dependent variable is not strictly continuous. Further, normality tests indicate that the data in the

¹⁹ As noted in footnote 13, I include the responses of participants in the no documentation condition for informational purposes only. These responses are not included in the statistical analysis of Hypothesis 3.

implemental mindset condition are not normally distributed. I thus consider a nonparametric form of the *t*-test, the Mann-Whitney test.

The assumptions of the Mann-Whitney test are twofold: that the two samples are random and independent and that the dependent variable is *intrinsically* continuous (Sheskin 2004). The first assumption is satisfied through my experimental design in which participants are randomly placed into conditions. The second assumption is satisfied with the use of a proportion dependent variable in which one can determine whether one observation's value is greater than another (Sheskin 2004). I conclude that the Mann-Whitney test is the appropriate statistical test of Hypothesis 3.

There are two experimental conditions tested (deliberative mindset condition and implemental mindset condition). The proportion variable shows the proportion of one type of response over a second type of response. Given these two facts, the Mann-Whitney test will test both hypotheses simultaneously because testing for differences in the proportion of broad, abstract responses between conditions is the same as testing for differences in the proportion of detailed, specific responses between conditions.²⁰

²⁰ For example, consider the case where participants in the deliberative mindset condition averaged 60-percent broad, abstract responses while participants in the implemental mindset condition averaged 30-percent broad, abstract responses. By extension, participants in the deliberative mindset condition would average 40-percent detailed, specific responses while participants in the implemental mindset condition would average 70-percent detailed, specific responses. Testing for differences between 60-percent and 30-percent is the same statistically as testing for differences between 40-percent and 70-percent when the cell sizes are equal.

5.6 Tests of Hypotheses

5.6.1 Tests of Hypotheses 1 and 2

Hypothesis 1 collectively predicts that auditors receiving instructions designed to invoke a deliberative mindset will display higher professional skepticism than will auditors receiving documentation instructions designed to invoke an implemental mindset or auditors not required to document evidence. Hypothesis 2 predicts that auditors receiving instructions designed to invoke a deliberative mindset will display lower professional skepticism than will auditors not required to document evidence. Recall that I use multiple measures of professional skepticism: assessments of the risk of material misstatement in the client's estimate, assessments of the likelihood that the auditor would recommend an adjustment of the estimate, the time spent searching for and reviewing audit evidence, the total time spent on the study, and the number of searches for additional audit evidence. The first two variables are measures of skeptical judgment while the remaining three variables measure skeptical action.

I first analyze the skeptical judgment variables using a Kruskal-Wallis test. Panel A of Table 5.11 reveals the mean ranks assigned to each variable by experimental condition. Panel B displays the results of the Kruskal-Wallis test for differences in these mean ranks. Both the risk of misstatement and the likelihood of recommending an adjustment variables are significantly different between conditions with p -values of 0.000 and 0.001, respectively.²¹

²¹ Recall that although the Box's Test suggested that the judgment dependent variables failed the homogeneity assumption, the Levene's tests of the individual variables suggested that the variables meet the homogeneity assumption. Finch (2005) shows that parametric MANOVA outperforms nonparametric

I test the robustness of these results with a median test. The results of the median test can be found in Panel C of Table 5.11. Both of the dependent variables are statistically significant, with a p -value of 0.001 for the risk of misstatement variable and a p -value of 0.030 for the likelihood of recommending an adjustment variable. Additionally, I run the dependent variables through a one-way ANOVA (non-tabulated) and find that each of the dependent variables is statistically significant with a p -value of 0.000 in each case.

These tests reveal that there are differences in the judgment dependent variables between conditions but do not reveal where these differences can be found. I therefore use planned contrasts to provide additional information that can be used to address Hypotheses 1 and 2. Panel A of Table 5.12 displays the results of planned contrasts of the risk of misstatement variable.

The first contrast tests that the assessed risk of misstatement in the deliberative mindset condition is higher than the assessed risk of misstatement in the implemental mindset condition. The significant p -value of 0.000 reveals that the difference in assessed risk is significantly different between these two conditions, with assessments in the deliberative mindset being significantly higher. This result provides support for Hypothesis 1a.

The second contrast tests that the assessed risk of misstatement in the deliberative mindset condition is higher than the assessed risk of misstatement in the no

MANOVA when the normality assumption is not met but the data meet the homogeneity assumption. I therefore use parametric MANOVA for these two variables to confirm the results. The results (non-tabulated) of the MANOVA are consistent with the results of the nonparametric MANOVA, with a F -statistic (Pillai's Trace) of 6.378 and a p -value of 0.000.

documentation condition. I find that auditors in the deliberative mindset condition assessed a significantly higher risk than did auditors in the no documentation condition (p -value of 0.000). This result provides support for Hypothesis 1b. The collective results of these two planned contrasts provide significant support for Hypothesis 1.

The third contrast tests that the assessed risk of misstatement in the implemental mindset condition is lower than the assessed risk of misstatement in the no documentation condition. The difference between the assessments in these two conditions is only 0.25. The nonsignificant results are not surprising, then, as I fail to find support for Hypothesis 2 with this dependent variables (p -value of 0.364).

I repeat the analyses above using the two time dependent variables: time spent searching for and reviewing audit evidence and total time spent on the study. I begin by running a Kruskal-Wallis test using these two variables. Panel A of Table 5.13 displays the mean ranks of the two dependent variables by experimental condition. Panel B reveals that the mean ranks are significantly different between conditions, with a p -value of 0.000 for the time spent searching for audit evidence variable and a p -value of 0.002 for the total time spent on the study variable.

I again test the robustness of these results with a median test. The results of the median test can be found in Panel C of Table 5.13. Both of the dependent variables are statistically significant, with a p -value of 0.000 for the time spent searching for evidence variable and a p -value of 0.001 for the total time spent on the study variable.

Additionally, I run the dependent variables through a one-way ANOVA (non-tabulated) and find that each of the dependent variables is statistically significant with a p -value of

0.000 for the time spent searching for evidence variable and a p -value of 0.008 for the total time spent on the study variable.

I use planned contrasts to identify the differences in these variables. Panel A of Table 5.14 reveals the results for the time spent searching for audit evidence variable. The first contrast tests that the auditors in the deliberative mindset condition spent more time searching for and reviewing audit evidence than did the auditors in the implemental mindset conditions. The difference of 5.49 minutes is statistically significant with a p -value of 0.043. This result provides additional support for Hypothesis 1a.

Support for Hypothesis 1b can be found in the second contrast which tests for differences in time spent between auditors in the deliberative mindset condition and auditors in the no documentation condition. This contrast reveals a statistically significant difference in time spent of 11.50 (p -value of 0.000); however, this result should be interpreted with caution. Recall that auditors in the no documentation condition did not have to document the audit evidence they uncovered. This difference between experimental conditions could be driving the significant result.

The third contrast tests for differences in time spent searching for and reviewing audit evidence between auditors in the implemental mindset condition and auditors in the no documentation condition. The difference of 6.01 minutes is statistically significant (p -value of 0.022). Again, this result should be interpreted with caution.

I next examine planned contrasts using the total time spent on the study variable. The results of these contrasts can be found in Panel B of Table 5.14. I find further support for Hypothesis 1a in the results of the first contrast. This contrast tests for a

significant difference in total time spent on the study between auditors in the deliberative mindset condition and auditors in the implemental mindset condition. The difference of 7.59 minutes is statistically significant (p -value of 0.017).

Likewise, the second planned contrast reveals a significant difference. Auditors in the deliberative mindset condition spent an average of 9.09 more minutes on the study than did participants in the no documentation condition. This difference is significant (p -value of 0.000) and supports Hypothesis 1b, but the difference can again be attributable to differences in the experimental conditions. Overall, the results of these two contrasts combined with the results of the first two contrasts of the judgment variables and the first time variable provide collective strong support for Hypothesis 1. The final planned contrast of these variables is a test for the difference in time spent between auditors in the implemental mindset condition and auditors in the no documentation condition. The difference of 1.51 minutes is not statistically significant (p -value of 0.330).

I conclude my tests of Hypotheses 1 and 2 by examining the number of additional searches for audit evidence conducted by participants between experimental conditions. Recall that each auditor could conduct up to four more searches beyond the initial search for audit evidence. I test for differences in the number of searches conducted between conditions using a one-way ANOVA.

Panel A of Table 5.15 shows the results of the ANOVA. There is a significant difference between the mean number of searches conducted in the three experimental conditions (p -value of 0.014). I test for the specific differences using planned contrasts.

The results of the planned contrasts can be found in Panel B of Table 5.15. The first contrast reveals that auditors in the deliberative mindset condition conducted 1.26 more searches, on average, than did their counterparts in the implemental mindset condition. This difference is statistically significant (p -value of 0.004) and provides further support for Hypothesis 1a.

The second contrast shows that auditors in the deliberative mindset condition conducted only 0.13 more searches, on average, than auditors in the no documentation condition. This result is not significant (p -value of 0.386) and provides no additional support for Hypothesis 1b. This lack of a finding is curious considering that auditors in the deliberative mindset condition displayed higher professional skepticism than auditors in the no documentation condition with the measures of professional skepticism discussed earlier.

One possible reason why auditors in these two conditions do not differ in their number of searches could be a difference in their perceptions of the task difficulty. As previously shown in Table 5.2, auditors in the deliberative mindset condition perceived the task as significantly more difficult than auditors in the other two conditions. However, Table 5.7 shows a nonsignificant correlation between experimental condition and task difficulty.

In order to more definitively test my conjecture, I test for this correlation again using only participants from the deliberative mindset and no documentation conditions. This time I find a negative correlation between experimental condition and task difficulty just short of conventional significance (p -value = 0.055). The change from almost no

relation to a moderately significant relation provides fuel for future research into the possible relation between task difficulty and professional skepticism.

The final contrast shows that auditors in the implemental mindset condition conducted 1.13 fewer searches for evidence than did auditors in the no documentation condition. This result provides support for Hypothesis 2 and exhibits further evidence that the implemental mindset could be inhibiting professional skepticism.

5.6.2 Tests of Hypothesis 3

Hypothesis 3a predicts that auditors receiving documentation instructions designed to invoke a deliberative mindset will be more likely to enter broad, abstract responses to the documentation questions than will auditors receiving instructions designed to invoke an implemental mindset. Hypothesis 3b predicts that auditors receiving documentation instructions designed to invoke an implemental mindset will be more likely to enter specific, detailed responses to the documentation questions than will auditors receiving instructions designed to invoke a deliberative mindset.

In terms of raw numbers, participants in the deliberative mindset condition responded with a larger percentage of broad, abstract responses. As shown in Table 5.10, deliberative mindset participants responded with a broad, abstract response 62.2 percent of the time. In contrast, implemental mindset participants responded with broad, abstract responses only 34.16 percent of the time. Participants in the deliberative mindset condition responded with detailed, specific responses 37.8 percent of the time as compared with 65.84 percent of the time by implemental mindset participants.

I test both of the hypotheses simultaneously using a Mann-Whitney test.²² Panel A of Table 5.16 shows the mean ranks for both experimental conditions. The results of the Mann-Whitney test shown in Panel B suggest that there is a significant difference between the proportion of broad, abstract responses delivered by the auditors in the deliberative mindset condition and auditors in the implemental mindset condition. By extension, there must also be a significant difference between the proportion of detailed, specific responses by auditors in the respective conditions. Hypothesis 3 is supported.²³

²² Recall from section 5.5.3 that both hypotheses are tested simultaneously because the dependent variable is a proportion between two possible outcomes.

²³ I confirm these results by using a two-sample Kolmogorov-Smirnov Test. Further, because the main reason why I could not use repeated measure logistic regression is the fact that the number of repeated measures is different between participants, I also use a generalized estimating equation which allows for missing data. I continue to find support for Hypothesis 3.

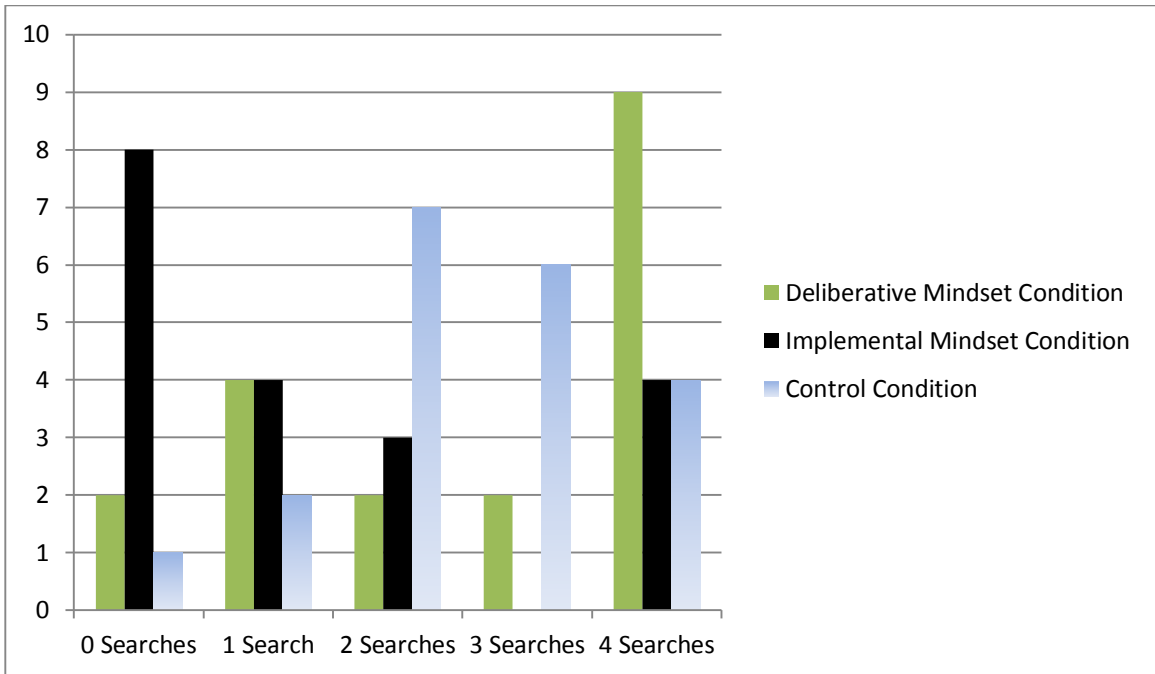


Figure 5 – Number of Additional Evidence Searches by Condition

TABLE 5.1. Participant Demographic Statistics

	Deliberative Mindset Condition Mean (s.d. or percent of sample) (<i>n</i> = 19)	Implemental Mindset Condition Mean (s.d. or percent of sample) (<i>n</i> = 19)	No documentation Condition Mean (s.d. or percent of sample) (<i>n</i> = 20)	Total Mean (s.d. or percent of sample) (<i>n</i> = 58)	<i>p</i> -value
Gender					0.529
Male	10 (52.6%)	11 (57.9%)	8 (40.0%)	29 (50.0%)	
Female	9 (47.4%)	8 (42.1%)	12 (60.0%)	29 (50.0%)	
Age	28.05 (4.034)	29.89 (4.267)	30.70 (5.823)	29.57 (4.842)	0.221
General work experience (years)	7.11 (5.322)	8.42 (6.086)	9.35 (6.930)	8.31 (6.125)	0.526
Audit work experience (years)	4.63 (3.095)	5.26 (4.107)	6.25 (5.077)	5.40 (4.171)	0.481
Experience auditing fair value estimates	16 (84%)	17 (89%)	19 (95%)	52 (90%)	0.556
Hurtt professional skepticism score	131.74 (16.251)	124.05 (16.092)	133.15 (17.942)	129.71 (16.990)	0.204
Auditor rank					0.496
Staff	3 (15.8%)	2 (10.5%)	3 (15.0%)	8 (13.8%)	
Senior	13 (68.4%)	12 (63.2%)	10 (50.0%)	35 (60.3%)	
Manager	3 (15.8%)	4 (21.1%)	6 (30.0%)	13 (22.4%)	
Partner	0 (0.0%)	1 (5.2%)	1 (5.0%)	2 (3.5%)	
Firm Type					0.923
Local	1 (5.3%)	1 (5.3%)	2 (10.0%)	4 (6.9%)	

Table 5.1 (Continued)					
Regional	3 (15.8%)	3 (15.8%)	2 (10.0%)	8 (13.8%)	
National	0 (0.0%)	1 (5.3%)	2 (10.0%)	3 (5.2%)	
International	15 (78.9%)	14 (73.7%)	14 (70.0%)	43 (74.1%)	

TABLE 5.2. Participant Responses to Post-Experimental Questionnaire

	Deliberative Mindset Condition Mean (s.d.) (<i>n</i> = 19)	Implemental Mindset Condition Mean (s.d.) (<i>n</i> = 19)	No documentation Condition Mean (s.d.) (<i>n</i> = 20)	Total Mean (s.d. or percent of sample) (<i>n</i> = 58)	<i>p</i> - value
Confidence in assessment	6.84 (2.192)	7.58 (1.644)	7.75 (1.118)	7.40 (1.716)	0.204
Trust information provided by client	4.16 (1.740)	7.11 (2.233)	6.25 (1.372)	5.84 (2.167)	0.000
Time allocated by manager reasonable	5.05 (2.223)	7.37 (2.650)	6.70 (1.922)	6.38 (2.441)	0.008
Difficulty of task (lower = harder)	5.95 (2.013)	7.21 (2.417)	7.40 (1.789)	6.86 (2.013)	0.049
Comfort taking as many audit hours as necessary	6.00 (2.809)	7.05 (1.840)	7.40 (1.789)	6.83 (2.233)	0.127
Client importance	8.89 (1.595)	9.00 (1.374)	8.95 (1.050)	8.95 (1.330)	0.972
Motivation to finish task in as few audit hours as possible	5.63 (1.921)	5.95 (2.656)	4.95 (2.800)	5.50 (2.487)	0.447
Task realism	8.32 (1.797)	7.26 (2.941)	7.20 (2.238)	7.59 (2.384)	0.270
Client riskiness	7.74 (1.939)	4.05 (2.248)	5.60 (1.231)	5.79 (2.360)	0.000
Satisfied that evidence gathered was sufficient to form opinion	6.95 (2.068)	7.26 (2.806)	7.15 (2.110)	7.12 (2.310)	0.916
Would have spent more time on task if more hours budgeted	6.84 (3.023)	4.63 (2.033)	4.95 (2.305)	5.47 (2.631)	0.017

TABLE 5.3 Tests for Differences in Testing Location			
	At Firm Mean (s.d. or percent of sample) (<i>n</i> = 30)	On Own Time Mean (s.d. or percent of sample) (<i>n</i> = 28)	<i>p</i> -value
Gender			1.000
Male	15 (50.0%)	14 (50.0%)	
Female	15 (50.0%)	14 (50.0%)	
Age	30.17 (4.893)	28.93 (4.791)	0.335
General work experience (years)	10.07 (7.187)	6.43 (4.077)	0.022
Audit work experience (years)	6.23 (4.847)	4.50 (3.145)	0.115
Experience auditing fair value estimates	26 (86.7%)	26 (92.9%)	0.448
Hurttt professional skepticism score	133.37 (15.690)	125.79 (17.725)	0.090
Auditor rank			0.381
Staff	4 (13.3%)	4 (14.3%)	
Senior	16 (53.3%)	19 (67.9%)	
Manager	9 (30.0%)	4 (14.3%)	
Partner	1 (3.3%)	1 (3.6%)	
Firm Type			0.000
Local	4 (13.3%)	0 (0.0%)	
Regional	8 (26.7%)	0 (0.0%)	
National	3 (10.0%)	0 (0.0%)	
International	15 (50.0%)	28 (100.0%)	

TABLE 5.4. Participant Construal Levels					
Panel A: Participant Construal Level by Experimental Condition					
	Deliberative Mindset Condition Mean (s.d.) (<i>n</i> = 19)	Implemental Mindset Condition Mean (s.d.) (<i>n</i> = 19)	No documentation Condition Mean (s.d.) (<i>n</i> = 20)	Total Mean (s.d.) (<i>n</i> = 58)	<i>p</i> -value
Construal level (min -8; max +8)	6.11 (2.536)	-2.42 (5.480)	1.40 (3.560)	1.69 (5.282)	0.000
Panel B: Planned Contrasts					
Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	8.53	1.385	6.154	25.372	0.000
Deliberative Mindset > No documentation	4.71	0.986	4.772	34.370	0.000
Implemental Mindset < No documentation	3.82	1.488	2.568	30.657	0.008
* I use weights of +1, -1 for the first two contrasts, respectively, and -1, +1 for the third contrast.					

TABLE 5.5. Descriptive Statistics of Dependent Variables				
	Deliberative Mindset Condition Mean (s.d.) (<i>n</i> = 19)	Implemental Mindset Condition Mean (s.d.) (<i>n</i> = 19)	No documentation Condition Mean (s.d.) (<i>n</i> = 20)	Total Mean (s.d. or percent of sample) (<i>n</i> = 58)
Risk of material misstatement	7.53 (2.245)	4.00 (2.380)	4.25 (2.074)	5.24 (2.723)
Likelihood of recommending an adjustment	6.74 (2.997)	3.16 (2.522)	4.00 (2.103)	4.62 (2.943)
Time spent searching for and reviewing audit evidence (in minutes)	16.65 (6.371)	11.15 (11.778)	5.14 (2.973)	10.88 (9.067)
Total time spent on the study (in minutes)	26.68 (6.407)	19.09 (13.312)	17.59 (6.470)	21.06 (9.946)
Number of searches	2.63 (1.535)	1.37 (1.571)	2.50 (1.100)	2.17 (1.500)

Table 5.6. Correlations Between Dependent Variables*					
	Risk of material misstatement	Likelihood of recommending an adjustment	Time spent searching for and reviewing audit evidence	Total time spent on the study	Number of searches
Risk of material misstatement	1	0.844 (0.000)	0.509 (0.000)	0.454 (0.000)	0.453 (0.000)
Likelihood of recommending an adjustment	0.815 (0.000)	1	0.304 (0.020)	0.286 (0.029)	0.393 (0.002)
Time spent searching for and reviewing audit evidence	0.567 (0.000)	0.439 (0.001)	1	0.926 (0.000)	0.610 (0.000)
Total time spent on the study	0.477 (0.000)	0.381 (0.003)	0.888 (0.000)	1	0.549 (0.000)
Number of searches	0.442 (0.001)	0.433 (0.001)	0.554 (0.000)	0.612 (0.000)	1

* - The figures above the diagonal are Pearson correlation coefficients (*p*-values). The figures below the diagonal are Spearman's rho coefficients (*p*-values). Boldfaced values are significant at the 0.05 level.

	Confidence in assessment	Trust information provided by client	Time allocated by manager reasonable	Difficulty of task	Comfort taking as many audit hours as necessary	Client importance	Motivation to finish task in as few audit hours as possible	Task realism	Client riskiness	Satisfied that evidence gathered was sufficient to form opinion	Would have spent more time on task if more hours budgeted	Hurtt professional skepticism score
Risk of material misstatement	-0.186 -0.213	-0.588 -0.516	-0.423 -0.398	-0.272 -0.268	-0.250 -0.126	-0.147 -0.120	-0.142 -0.178	-0.025 -0.050	0.701 0.621	-0.339 -0.345	0.342 0.270	-0.114 -0.057
Likelihood of recommending an adjustment	-0.154 -0.250	-0.593 -0.587	-0.402 -0.437	-0.273 -0.316	-0.379 -0.308	-0.157 -0.208	-0.029 -0.105	0.020 -0.064	0.746 0.727	-0.215 -0.333	0.334 0.280	-0.115 -0.033
Time spent searching for and reviewing audit evidence	-0.105 -0.189	-0.409 -0.523	-0.287 -0.381	-0.241 -0.335	-0.058 -0.093	-0.030 -0.052	-0.315 -0.352	-0.141 -0.141	0.436 0.587	-0.313 -0.382	0.301 0.220	0.139 0.192
Total time spent on the study	-0.129 -0.155	-0.457 -0.525	-0.402 -0.456	-0.255 -0.300	-0.082 0.010	-0.039 -0.107	-0.438 -0.459	-0.249 -0.284	0.516 0.583	-0.350 -0.437	0.248 0.217	0.308 0.396
Number of searches	0.062 -0.069	-0.386 -0.352	-0.243 -0.233	-0.027 -0.046	-0.070 -0.015	-0.092 -0.106	-0.334 -0.329	-0.137 -0.145	0.501 0.423	-0.360 -0.376	0.250 0.222	0.193 0.206
Mindset Condition (IV)	0.218 0.159	0.393 0.422	0.275 0.269	0.297 0.271	0.258 0.218	0.017 -0.083	-0.115 -0.093	-0.192 -0.201	-0.367 -0.387	0.036 0.035	-0.294 -0.265	0.038 0.027

* - The figures displayed are Pearson correlation coefficients (Spearman's rho coefficients). Boldface indicates that the correlation is significant at the 0.05 level.

Table 5.8. Tests of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	<i>p</i> -value	Statistic	df	<i>p</i> -value
Risk of material misstatement	0.140	58	0.007	0.933	58	0.003
Likelihood of recommending an adjustment	0.193	58	0.000	0.902	58	0.000
Time spent searching for and reviewing audit evidence	0.209	58	0.000	0.851	58	0.000
Total time spent on the study	0.123	58	0.029	0.942	58	0.008
Number of searches	0.182	58	0.000	0.865	58	0.000

Table 5.9. Tests of the Homogeneity of the Variance-Covariance Matrices					
Panel A: Box's Test of Equality of Covariance Matrices					
	Box's M	<i>F</i> -statistic	df 1	df 2	<i>p</i> -value
Risk/likelihood dependent variables	23.565	3.721	6	74181.049	0.001
Time dependent variables	48.169	7.605	6	74181.049	0.000
Panel B: Levene's Test of Equality of Error Variances					
		<i>F</i> -statistic	df 1	df 2	<i>p</i> -value
Risk of material misstatement		0.530	2	55	0.591
Likelihood of recommending an adjustment		1.336	2	55	0.271
Time spent searching for and reviewing audit evidence		16.788	2	55	0.000
Total time spent on the study		10.273	2	55	0.000
Number of searches		2.813	2	55	0.069

Table 5.10. Breakdown of Textual Responses			
Panel A: Breakdown by Experimental Condition			
	Deliberative mindset condition	Implemental mindset condition	No documentation condition
Number of (Percent of) broad, abstract responses	92 (63.0%)	44 (40.7%)	12 (60.0%)
Number of (Percent of) detailed, specific responses	54 (37.0%)	64 (59.3%)	8 (40.0%)
Total number of responses	146	108	20
Panel B: Breakdown by Participant			
Average percentage (std. dev.) of broad, abstract responses (by participant)	0.6220 or 62.20% (0.258)	0.3416 or 34.16% (0.284)	0.6000 or 60.00% (0.503)
Average percentage (std. dev.) of detailed, specific responses (by participant)	0.3780 or 37.80% (0.258)	0.6584 or 65.84% (0.284)	0.4000 or 40.00% (0.503)

Table 5.11. Tests of Hypotheses 1 and 2 – Judgment Dependent Variables					
Panel A: Mean Ranks from Kruskal-Wallis Test					
	Mean rank (risk of misstatement)		Mean rank (likelihood of recommending an adjustment)		
Deliberative mindset condition	43.34		41.00		
Implemental mindset condition	21.82		20.34		
No documentation condition	23.65		27.28		
Panel B: Results of Kruskal-Wallis Test					
			Chi-square	df	<i>p</i> -value
Risk of misstatement			19.438	2	0.000
Likelihood of recommending an adjustment			15.053	2	0.001
Panel C: Results of a Median Test					
	N	Median	Chi-square	df	<i>p</i> -value
Risk of misstatement	58	6.00	14.482	2	0.001
Likelihood of recommending an adjustment	58	4.50	7.042	2	0.030

Table 5.12. Planned Contrasts of Judgment Dependent Variables					
Panel A: Planned Contrasts of Risk of Misstatement					
Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	3.53	0.725	4.865	55	0.000
Deliberative Mindset > No documentation	3.28	0.716	4.578	55	0.000
Implemental Mindset < No documentation	0.25	0.716	0.349	55	0.364
Panel B: Planned Contrasts of Likelihood of Recommending an Adjustment					
Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	3.58	0.830	4.310	55	0.000
Deliberative Mindset > No documentation	2.74	0.820	3.338	55	0.001
Implemental Mindset < No documentation	0.84	0.820	1.027	55	0.155
* I use weights of +1, -1 for the first two contrasts, respectively, and -1, +1 for the third contrast.					

Table 5.13. Tests of Hypotheses 1 and 2 – Time Dependent Variables					
Panel A: Mean Ranks from Kruskal-Wallis Test					
	Mean rank (time spent searching for and reviewing audit evidence)		Mean rank (total time spent on the study)		
Deliberative mindset condition	43.47		40.68		
Implemental mindset condition	26.84		23.26		
No documentation condition	18.75		24.80		
Panel B: Results of Kruskal-Wallis Test					
			Chi-square	df	<i>p</i> -value
Time spent searching for and reviewing audit evidence			21.587	2	0.000
Total time spent on the study			12.476	2	0.002
Panel C: Results of a Median Test					
	N	Median	Chi-square	df	<i>p</i> -value
Time spent searching for and reviewing audit evidence	58	7.00	28.779	2	0.000
Total time spent on the study	58	18.83	13.274	2	0.001

Table 5.14. Planned Contrasts of Time Dependent Variables**Panel A: Planned Contrasts of Time Spent Searching For and Reviewing Audit Evidence**

Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	5.49	3.072	1.787	27.703	0.043
Deliberative Mindset > No documentation	11.50	1.606	7.164	25.196	0.000
Implemental Mindset < No documentation **	-6.01	2.783	-2.161	20.175	0.022

Panel B: Planned Contrasts of Total Time Spent on the Study

Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	7.59	3.389	2.238	25.914	0.017
Deliberative Mindset > No documentation	9.09	2.062	4.408	36.932	0.000
Implemental Mindset < No documentation	-1.51	3.379	-0.445	25.757	0.330

* I use weights of +1, -1 for the first two contrasts, respectively, and -1, +1 for the third contrast. I use the contrast results that do not assume equal variances.
 ** The significant difference found in this contrast shows the implemental mindset group is significantly different from the no documentation group, but in the opposite direction of the prediction.

Table 5.15. Tests of Hypotheses 1 and 2 – Number of Searches For Evidence Dependent Variable					
Panel A: Results of a One-Way ANOVA					
	Sum of Squares	df	Mean Square	<i>F</i> -statistic	<i>p</i> -value
Between Groups	18.434	2	9.217	4.615	0.014
Within Groups	109.842	55	1.997		
Total	128.276	57			
Panel B: Planned Contrasts					
Contrast*	Difference	Std. Error	<i>t</i> -statistic	df	<i>p</i> -value (one-tailed)
Deliberative Mindset > Implemental Mindset	1.26	0.459	2.755	55	0.004
Deliberative Mindset > No documentation	0.13	0.453	0.291	55	0.386
Implemental Mindset < No documentation	1.13	0.453	2.499	55	0.008
* I use weights of +1, -1 for the first two contrasts, respectively, and -1, +1 for the third contrast.					

Table 5.16. Tests of Hypothesis 3				
Panel A: Mean Ranks from Mann-Whitney Test Using Proportion of Broad, Abstract Responses				
	Mean rank (Percentage of broad, abstract responses by participant)			Sum of ranks
Deliberative mindset condition	24.42			464.00
Implemental mindset condition	14.58			277.00
Panel B: Results of Mann-Whitney Test Using Proportion of Broad, Abstract Responses				
	Mann-Whitney U	Wilcoxon W	z-statistic	p-value
Percentage of broad, abstract responses by participant	87.000	277.000	-2.741	0.006

6.0 SUMMARY AND CONCLUSIONS

6.1 Summary of Key Findings

This study tests for a relation between psychological distance, mindsets, and professional skepticism. Regulators have criticized auditors for displaying a lack of professional skepticism (PCAOB 2008; Bratten et al. 2013); accordingly, a goal of this study is to test an intervention designed to prolong the deliberative mindset, a mindset which can be theoretically and positively linked to higher professional skepticism. I employ 1 x 3 between-participants design to test my hypotheses and use experienced auditors as participants. I incorporate multiple measure of professional skepticism in my tests. Table 6.1 contains a summary of each hypothesis and its results.

Hypothesis 1a predicts that auditors receiving instructions designed to invoke a deliberative mindset will display higher professional skepticism than will auditors receiving documentation instructions designed to invoke an implemental mindset. Similarly, Hypothesis 1b predicts that auditors receiving the deliberative mindset instructions will display higher professional skepticism than will auditors not required to document evidence. I use five measures of professional skepticism to test these hypotheses. The first two, the assessed risk that management's estimate contains a material misstatement and the likelihood that the auditor would recommend an adjustment to the estimate, can be considered measures of skeptical judgment (Montague

2010). The amount of time spent searching for and reviewing evidence, the total time spent on the study, and the number of searches for audit evidence are measures of skeptical action (Hurt et al. 2013).

I find significant support for both Hypothesis 1a and 1b using all five of my measures of professional skepticism. Auditors receiving the instructions designed to invoke a deliberative mindset assessed a higher risk that the estimate is materially misstated than did auditors receiving instructions designed to invoke an implemental mindset and auditors not required to document evidence. Auditors in the deliberative mindset condition also responded that they would be more likely to recommend an adjustment of the estimate.

Further, auditors in the deliberative mindset condition spent more time searching for and reviewing audit evidence, spent more time on the study, and conducted more searches for evidence than did auditors in the implemental mindset condition. I find some support for Hypothesis 1b in that auditors in the deliberative mindset, when compared with auditors in the no documentation condition, spent significantly more time searching for and reviewing audit evidence and spent more time on the study.²⁴ However, these two groups did not differ on the number of times they searched for more audit evidence.

A possible reason why I did not find support for Hypothesis 1b using the number of searches variable is that participants in the deliberative mindset condition found the task to be significantly more difficult than participants in the other two conditions.

²⁴ As discussed earlier, the differences in these variables could be attributable to differences in the experimental conditions, particularly for the time spent searching for and reviewing audit evidence variable.

Participants in the no documentation group could have searched for more evidence because they neither felt this difficult taxation nor did they have to document the evidence they found. Thus, it would have been less costly in terms of cognitive load for participants in the no documentation condition to continue searching.

Hypothesis 2 predicts that auditors receiving documentation instructions designed to invoke an implemental mindset will display lower professional skepticism than will auditors not required to document evidence. I find mixed support for this hypothesis. Participants between these two conditions did not significantly differ in their assessments of the risk of misstatement or their assessed likelihoods of recommending an adjustment. Thus, I find no support using the measures of skeptical judgment.

I find no statistical difference between the total time spent on the study between participants in the implemental mindset group and participants in the no documentation group. Participants in the no documentation group spent significantly less time searching for and reviewing audit evidence, but this contrary result can be explained by the fact that these participants did not have to document the evidence. Therefore, they could have spent less time on this phase of the task due to differences in the requirements rather than because they displayed lower professional skepticism.

I find that participants in the implemental mindset condition conducted significantly fewer searches for evidence than did participants in the no documentation condition. This finding strengthens the inference that the implemental mindset is associated with lower professional skepticism and provides support for Hypothesis 2.

Auditors in an implemental mindset could be more susceptible to biases such as the preference to side with the client.

Hypothesis 3a predicts that auditors receiving instructions designed to invoke a deliberative mindset will be more likely to enter broad, abstract documentation responses than will auditors receiving instructions designed to invoke an implemental mindset. In turn, Hypothesis 3b predicts that auditors in the implemental mindset group will be more likely to enter detailed, specific documentation responses than will their counterparts in the deliberative mindset group. I find strong support for this set of hypotheses.

6.2 Contributions

This study offers a number of important contributions to research, practice, and regulation. First, I contribute to auditing and psychology theory by demonstrating the relation between psychological distance, mindsets, and professional skepticism. In particular, I show that the deliberative mindset, previously related to increased psychological distance, is positively related to higher professional skepticism. In contrast, I document a negative relation between the implemental mindset (decreased psychological distance) and lower professional skepticism.

I provide information important to academics, practitioners, and regulators interested in creating a judgment framework to assist with the audits of complex estimates (as described in SEC 2008 and Bratten et al (2013)). My results suggest that having an auditor consider the “why” of a situation rather than the “how” of a situation can boost professional skepticism. Such a simple intervention can easily be incorporated into any judgment framework.

Additionally relevant to the judgment framework and consistent with prior psychology research, I demonstrate a relation between mindsets and the type of responses used to document or describe the situation. Establishing this link helps solidify the relation between mindsets, psychological distance and professional skepticism described throughout the paper. Specifically, broad, abstract responses are associated with increased psychological distance (Trope and Liberman 2003; 2010; Fujita et al. 2007), and I demonstrate that auditors in a deliberative mindset are more likely to respond with broad, abstract responses. Combined with the strong support for Hypothesis 1 indicated earlier, I provide evidence that auditors in a deliberative mindset have increased psychological distance from the evidence they evaluate which could be driving the increase in professional skepticism.

I answer the call for research by Hurtt (2010) by exploring the concept of state professional skepticism. By controlling for an auditor's trait professional skepticism, I show that the differences in professional skepticism displayed by auditors between my experimental conditions are due to changes in state professional skepticism. Thus, I am able to link the concept of state professional skepticism with the deliberative mindset and show that task-specific instructions can be effective in increasing state skepticism.

I further contribute to theory and practice by demonstrating the possibility of a negative relation between task complexity and professional skepticism. One possible reason why there is not a significantly different number of searches between deliberative mindset auditors and my no documentation group auditors is that the increase in perceived task difficulty suggested by the deliberative mindset auditors could have caused them to end their searches early. The increased cognitive load introduced by

considering the evidence with a deliberative mindset could have been too taxing on the auditors. The ending of the search process for this reason would be inherently unrelated to professional skepticism but would be viewed *ex post* as a display of lower professional skepticism (particularly by regulators). Future research, as described below, can be used to test this conjecture.

6.3 Limitations

Every experimental study is subject to limitations and the current study is no exception. First, I lost some experimental control by allowing a few groups of participants the ability to complete the experiment on their own time. As noted earlier, there is a difference, albeit an explainable one, in certain demographic variables between participants that completed the study on their own and participants that completed the study in a controlled setting. Although I would prefer to have all of the participants complete the study in a controlled setting, I find that testing location did not interfere with the results. The results of the study remain unchanged when including testing location as a covariate.

Second, I believe improvements can be made in the measurement of construal levels. As noted in Section 5.3, participants in the deliberative mindset condition demonstrated high construal level scores ($\bar{x} = 6.11$ out of a maximum of 8.00) while participants in the implemental mindset condition demonstrated lower scores ($\bar{x} = -2.42$ out of a minimum -8.00). A possible reason why participants in the implemental mindset condition did not score lower is that the low-level construals used in the exercise developed by Fujita et al. (2006) were too specific. For example, one situation asked

participants about the idea of “making an expensive purchase.” The wording for the low-level construal description of this situation, “swiping a credit card,” could have been too specific and caused participants to move to the high-level construal option even though they might have been thinking with low-level construals in mind. Creating a better measure of construal level will help provide support for the theoretical diagram displayed in Figure 2 which predicts the relative time participants will spend in each mindset.

Third, participants in the no documentation condition did not have the requirement to document evidence. This difference in the experimental design makes comparisons between the no documentation group and the experimental groups more difficult, particularly in terms of time spent on the study. I also potentially lost valuable textual comments that could have been entered had I provided textboxes to participants in the no documentation condition with minimal instructions to preserve control.

Finally, the deliberative mindset intervention increased two variables important in an audit setting: time spent on the task and perceived difficulty of the task. An increase in time could be considered inefficient. I argue that there should not be inefficiency issues in the current study because I designed the evidence to suggest that the client’s estimate is on the upper end of a reasonable range of values. However, the current study cannot speak to whether there would be an increase in time in an audit situation not calling for increased professional skepticism.

The increase in perceived task difficulty could suggest that the deliberative mindset manipulation increased the cognitive load on participants in that condition. How much the increased in perceived difficulty impacted the study is unclear. The

understanding of this issue is particularly important considering the difficulty already inherent in auditing complex estimates (Christensen et al. 2012; Bratten et al. 2013).

Future research can help tease out whether task difficulty affects professional skepticism.

6.4 Future Research

Potential limitations of a study often lend themselves to excellent future research opportunities. As suggested in the previous section, one future course of study is to test the relation between task difficulty and professional skepticism. More difficult tasks may induce higher skeptical action due to the increase in focus required by the higher difficulty. On the other hand, as suggested by the results in this study, higher complexity could cause an auditor to prematurely conclude a task, such as searching for audit evidence, simply because the task is cognitively draining. Such an end to the task could be later interpreted to mean that the auditor failed to display an appropriate amount of professional skepticism.

I also see promise in testing whether the increase in professional skepticism induced by the deliberative mindset intervention causes a similar increase in professional skepticism in a situation not calling for higher professional skepticism. For example, future research could test for increases in skeptical judgments and actions in a situation where the client's estimate is fairly presented. The deliberative mindset intervention could be deemed inefficient if there are increases and the increases are to the level of those displayed in the current study.

This study shows that documentation instructions can be used to prolong the deliberative mindset and increase professional skepticism. Are there other inexpensive

interventions that auditors can employ that will result in similar increases in skepticism?

One possible option is a decision aid. A properly designed decision aid could be effective in promoting professional skepticism; however, some types of decision aids can have the opposite effect and can cause mechanistic behavior (Dowling and Leech 2007; Whitecotton et al 1998). Future research would be useful in developing the proper design of such a decision aid.

Further, my results provide evidence of a relation between construal level, psychological distance, and professional skepticism. Auditors in the deliberative mindset condition displayed higher professional skepticism and were more likely to enter broad, abstract responses in their audit documentation. Future research could potentially use this relation to develop an *ex post* measure of professional skepticism that would be useful in demonstrating an auditor's level of professional skepticism at given points in an audit.

Finally, future research can attempt to identify mindset/construal levels via methods other than those described in this study. For example, a study can be created that uses verbal protocol analysis to help gauge a participant's mindset level at each step of the experimental task. This type of analysis could prove valuable in identifying the specific times in which a person shifts mindsets and will help identify the changes in judgments and actions that occur with the shift in mindset.

Table 6.1. Hypotheses Summary and Results		
Hypothesis	Summary	Result
Hypothesis 1a	Auditors in a deliberative mindset will display higher professional skepticism than will auditors in an implemental mindset.	Supported
Hypothesis 1b	Auditors in a deliberative mindset will display higher professional skepticism than will auditors not required to document evidence.	Mixed Support
Hypothesis 2	Auditors in an implemental mindset will display lower professional skepticism than auditors not required to document evidence.	Mixed Support
Hypothesis 3a	Auditors in a deliberative mindset will be more likely to enter broad, abstract responses than will auditors in an implemental mindset.	Supported
Hypothesis 3b	Auditors in an implemental mindset will be more likely to enter specific, detailed responses than will auditors in a deliberative mindset.	Supported

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APPENDIX A – IRB APPROVAL LETTER



DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

April 6, 2012

Jason Rasso, CFE
University of South Florida
School of Accountancy , BSN 3404
4202 E. Fowler Avenue
Tampa, Florida 33612

RE: **Exempt Certification** for IRB#: Pro00007878
Title: The Efficacy of Decision Aids in Promoting Professional Skepticism

Dear Mr. Rasso:

On 4/5/2012 , the Institutional Review Board (IRB) determined that your research meets USF requirements and Federal Exemption criteria as outlined in the federal regulations at 45CFR46.101(b): (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures. Please note that changes to this protocol may disqualify it from exempt status. Please note that you are responsible for notifying the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a continuing review application at least 60 days prior to the exemption expiration date. Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink that reads "John A. Schinka, Ph.D." The signature is written in a cursive style with a large initial 'J' and 'S'.

John Schinka, Ph.D., Chairperson
USF Institutional Review Board

APPENDIX B – EXPERIMENTAL INSTRUMENT

Instructions:

Thank you for your participation in this research study. The purpose of this research study is to gain insights into decision-making in an accounting setting. You have the alternative to choose not to participate in this study. Refusal to take part in this study will involve no penalty or loss of benefits to which you would otherwise be entitled. You may discontinue participation in this study at any time without penalty or loss of benefits to which you may otherwise be entitled. This research study is being conducted as part of my dissertation and I would really appreciate your participation in the study.

To participate, I will ask you to assume the role of a senior auditor tasked with evaluating an issue pertaining to a hypothetical client's intangible asset account. You will be asked to evaluate the client's fair value estimate for the intangible asset by reviewing evidence uncovered during your audit. The case should take approximately 15 - 30 minutes. Your participation is voluntary and your identity will be kept confidential.

The information provided in this set of materials is not intended to be fully representative of the level of information which may be available to you if you were asked to make similar judgments in the real world. Please read all of the instructions and answer all of the questions included in this survey.

Thank you in advance for your participation!

The person who is in charge of this research study is Jason Rasso. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study. We don't know if you will get any benefits by taking part in this study.

If you have any questions or concerns about this study, please contact Jason Rasso at (813) 974-6863. If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Division of Research Integrity and Compliance at the University of South Florida at (813) 974-7340.

Next Stage

Experiment Instructions

THE AUDIT OF AMERICAN PIZZA COMPANY

American Pizza Company: Background & Financial Information

Assume that you are working on the audit engagement for a hypothetical public client, American Pizza Company (APC), for the fiscal year ended December 31, 2011. APC is a restaurant franchise featuring Chicago-style wood-fired pizzas.

The company's principal business is to own and franchise APC restaurants in the U.S. APC generates revenue from three sources: (1) profits from the operation of Company-owned restaurants, (2) franchise fees and royalties from franchise restaurants, and (3) profits from the regional commissaries from which all restaurants are required to purchase dough, meats, cheese and sauce.

Franchising is very common among pizza restaurants and is a means of providing the capital to finance growth. In franchising, companies lend their brand name and operating expertise for a share of the revenue. In addition to royalty payments, franchisors commonly require up-front fees to purchase the franchise and many require franchisees to purchase supplies from a central location to maintain consistency.

While franchising continues to be used to fund growth, the pizza industry is also seeing some reverse franchising in the past few years. Specifically, franchisors are reacquiring rights for existing restaurants and/or undeveloped markets. APC has been involved in these types of transactions over the past few years. The reasons for these acquisitions are varied and include taking over poorly performing restaurants to protect the Company's brand name and to preserve the value of the local market. Reacquisitions also take place for strategic cash flow management purposes whereby investing current free cash flows in the reacquisition yields the expectation of replacing franchise royalties with the larger profits from the restaurants themselves. Prices paid in these acquisitions vary substantially, but almost always include some premium related to the contractual element of the franchise rights that is capitalized as an intangible asset.

The following table presents selected account balances and disclosures from APC's financial statements.

12/31/2011 (Before Audit Adjustments)			
Total Revenues	\$485,882,000	Reacquired Franchise Rights	\$127,412,000
Net Income	\$41,674,000	Total Assets	\$432,285,000
Average Number of Common Shares Outstanding: 61,286,000			
Earnings Per Share (EPS): \$0.68			

Significant Accounting Policies Related to Reacquired Franchise Rights:

Reacquired franchise rights results from the acquisition by the franchisor of franchise restaurants from existing franchisees. The excess of the net amount assigned to identifiable assets and liabilities recorded upon the acquisition of franchise restaurants is assigned to the value of the asset representing the franchise right to the restaurant acquired. Reacquired franchise rights have an indefinite life and are reviewed at least annually for impairment or whenever events or circumstances indicate the carrying amount of the asset may be impaired in accordance with SFAS No. 142.

SFAS No. 142 requires that an intangible asset not subject to amortization (an indefinite-life intangible asset such as reacquired franchise rights) be tested annually for impairment. The impairment test is the comparison of the book value and fair value of the intangible asset. Impairment is recognized for the excess of the book value of the intangible asset over its fair value.

[Click here to go to review information about the audit.](#)

Client Information

Client Information

Audit Task: Evaluation of Reacquired Franchise Rights

American Pizza Company (hereafter, APC) has been a client of your auditing firm for over ten years and has grown in importance with the increase in audit fees that have accompanied its recent growth spurt. The client is one of your office's top 20 audit clients in terms of recurring audit fees, and is the primary client for the past three years for the partner in charge of the audit who will be rotating out from the client in two years. Your firm does not provide significant nonaudit services to APC.

You have been asked to review APC's reported value for reacquired franchise rights in the state of Pennsylvania and to make a preliminary judgment regarding your perceived risk of material misstatement related to the account. APC performed its annual impairment test as of December 31, 2011, and found no instances of impairment. An excerpt from the impairment analysis shows the following:

Book Value	\$22,770,000 (Balance Sheet)
Fair Value Estimate	\$24,620,000
Book value in excess of fair value	\$0 (No impairment)

Your task is to evaluate management's fair value estimate by reviewing management's assumptions and evidence available to management when determining the fair value estimate.

Please assume that no audit adjustments have been proposed at this point, and the only audit issue to be resolved before completing the audit pertains to the reacquired franchise rights in Pennsylvania. Prior to field work, your firm set materiality for reacquired franchise rights at 2% of the preliminary account balance of \$127,412,000, which equals \$2,548,240.

Management Assumptions Used in the Fair Value Estimate:

1. Management assumes an annual growth rate of 4 restaurants.
2. Management assumes weekly revenue of \$50,000 per restaurant.
3. Management assumes an expense ratio of 20% of revenue.
4. Management assumes a discount rate of 6%.

When you are finished reading the client information and the audit information, please press the "Begin Task" button to continue.

Begin Task

To review the client information again, please click the "Client Information" button at the top of the screen.

Audit Information

You have gathered the audit evidence listed below. In total, you have used up **70%** of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

Audit Evidence:

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

APC's controller produced the fair value estimate.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

You test management's mathematical calculations and formulas. You do not discover any errors.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

APC produces pizzas of higher quality than most other pizza franchises.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

First Evidence Screen (No Documentation Condition)

Client Information

Audit Information

You have gathered the audit evidence listed below. In total, you have used up **70%** of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

As you are reviewing the audit evidence, please keep in mind the following two questions which will need to be answered prior to continuing on with the task:

Thinking **broadly** about all of the evidence **collectively**, list reasons **why** management's estimate could be **fairly presented**.

Thinking **broadly** about all of the evidence **collectively**, list reasons **why** management's estimate could be **materially misstated**.

Audit Evidence:

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

APC produces pizzas of higher quality than most other pizza franchises.

APC's controller produced the fair value estimate.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

You test management's mathematical calculations and formulas. You do not discover any errors.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

Before continuing, please consider the following two questions:

Thinking **broadly** about all of the evidence **collectively**, list reasons **why** management's estimate could be **fairly presented**.

Thinking **broadly** about all of the evidence **collectively**, list reasons **why** management's estimate could be **materially misstated**.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

First Evidence Screen (Deliberative Mindset Condition)

Client Information

Audit Information

You have gathered the audit evidence listed below. In total, you have used up **70%** of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

As you are reviewing the audit evidence, please keep in mind the following two questions which will need to be answered prior to continuing on with the task:

Thinking **specifically** about **each** evidence item, list reasons **how** management's estimate could be **fairly presented**.

Thinking **specifically** about **each** evidence item, list reasons **how** management's estimate could be **materially misstated**.

Audit Evidence:

APC produces pizzas of higher quality than most other pizza franchises.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

APC's controller produced the fair value estimate.

You test management's mathematical calculations and formulas. You do not discover any errors.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

Before continuing, please consider the following two questions:

Thinking **specifically** about **each** evidence item, list reasons **how** management's estimate could be **fairly presented**.

Thinking **specifically** about **each** evidence item, list reasons **how** management's estimate could be **materially misstated**.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

First Evidence Screen (Implemental Mindset Condition)

Client Information	Audit Information
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You have expended additional audit hours to gather new evidence which is shown below. In total, you have used up 80% of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

New Evidence

You ask a specialist in your firm to prepare a benchmark estimate. His estimate is lower than management's fair value estimate.

You review the minutes of APC's last two board meetings but do not find any mention of management's intentions relative to the reacquired franchise rights account.

The model used by management is the same model used by other companies in the pizza franchise industry and is consistent with the model used by APC's main competitors.

You determine that there is only a moderate risk associated with the expected future cash flows related to the reacquired franchise rights account.

Restaurant franchises similar to American Pizza Company have been growing at a rate of 3.5 restaurants per year. This rate is in contrast to the projected growth rate of 4 restaurants per year for American Pizza Company.

Previously Viewed Evidence

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

APC's controller produced the fair value estimate.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

APC produces pizzas of higher quality than most other pizza franchises.

You test management's mathematical calculations and formulas. You do not discover any errors.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

Second Screen of Evidence (No Documentation Condition)

*Note that the deliberative mindset and implemental mindset conditions still have the requirements to document audit evidence shown on their respective screens.

Client Information

Audit Information

You have expended additional audit hours to gather new evidence which is shown below. In total, you have used up 90% of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

New Evidence

American Pizza Company focuses on a dine-in experience as opposed to the traditional pizza delivery business.

The person who prepared APC's fair value estimate does not have prior experience in preparing fair value estimates.

The increase in fuel costs has caused an increase in the expense ratio of other pizza companies, but APC focuses on creating dine-in restaurants. High fuel costs do not significantly affect APC's expense ratio.

The model used by management is consistent with what companies in other industries use when estimating reacquired franchise rights. The model appears to be the standard model used by over 95% of companies when estimating reacquired franchise rights.

A detailed examination of American Pizza Company's history shows that the company meets its target growth rate approximately 80% of the time, but its growth rate during the other 20% of the time is only two restaurants per year.

Previously Viewed Evidence

You determine that there is only a moderate risk associated with the expected future cash flows related to the reacquired franchise rights account.

Restaurant franchises similar to American Pizza Company have been growing at a rate of 3.5 restaurants per year. This rate is in contrast to the projected growth rate of 4 restaurants per year for American Pizza Company.

You ask a specialist in your firm to prepare a benchmark estimate. His estimate is lower than management's fair value estimate.

You review the minutes of APC's last two board meetings but do not find any mention of management's intentions relative to the reacquired franchise rights account.

The model used by management is the same model used by other companies in the pizza franchise industry and is consistent with the model used by APC's main competitors.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

APC produces pizzas of higher quality than most other pizza franchises.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

APC's controller produced the fair value estimate.

You test management's mathematical calculations and formulas. You do not discover any errors.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

Third Screen of Evidence (No Documentation Condition)

Client Information

Audit Information

You have expended additional audit hours to gather new evidence which is shown below. In total, you have used up **100%** of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

New Evidence

As of the date of your review, APC appears to have the economic ability to follow through with its planned restaurant growth.

An interview with the person who prepared the fair value estimate indicated that the CEO of APC expressed a desire for the estimate to be as high as possible. The preparer stated that no one exerted undue influence on him, though, and the preparer does not have any incentives to overstate the estimate.

The management of APC did not consider using a third party to prepare the estimate.

American Pizza Company's marketing expenses have not increased significantly over the past three years

The CFO of APC tells you about the company's plans relative to reacquired franchise rights. The plan appears to be consistent with the assumptions used in management's estimation model.

Previously Viewed Evidence

American Pizza Company focuses on a dine-in experience as opposed to the traditional pizza delivery business.

The person who prepared APC's fair value estimate does not have prior experience in preparing fair value estimates.

The increase in fuel costs has caused an increase in the expense ratio of other pizza companies, but APC focuses on creating dine-in restaurants. High fuel costs do not significantly affect APC's expense ratio.

The model used by management is consistent with what companies in other industries use when estimating reacquired franchise rights. The model appears to be the standard model used by over 95% of companies when estimating reacquired franchise rights.

A detailed examination of American Pizza Company's history shows that the company meets its target growth rate approximately 80% of the time, but its growth rate during the other 20% of the time is only two restaurants per year.

You determine that there is only a moderate risk associated with the expected future cash flows related to the reacquired franchise rights account.

Restaurant franchises similar to American Pizza Company have been growing at a rate of 3.5 restaurants per year. This rate is in contrast to the projected growth rate of 4 restaurants per year for American Pizza Company.

You ask a specialist in your firm to prepare a benchmark estimate. His estimate is lower than management's fair value estimate.

You review the minutes of APC's last two board meetings but do not find any mention of management's intentions relative to the reacquired franchise rights account.

The model used by management is the same model used by other companies in the pizza franchise industry and is consistent with the model used by APC's main competitors.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

APC produces pizzas of higher quality than most other pizza franchises.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

APC's controller produced the fair value estimate.

You test management's mathematical calculations and formulas. You do not discover any errors.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

Do you wish to continue searching for more evidence related to this fair value audit?

If yes to gather more evidence

If no to finalize the audit and provide your opinion

Fourth Screen of Evidence (No Documentation Condition)

[Client Information](#)

[Audit Information](#)

You have expended additional audit hours to gather new evidence which is shown below. In total, you have used up **110%** of the audit hours allocated to this task by your audit manager. Your audit manager will look favorably upon you if you complete the fair value audit using as few audit hours as possible; however, you should continue searching for evidence until you have satisfied yourself that you have obtained sufficient appropriate evidential matter to provide you with a reasonable basis for forming an opinion.

New Evidence

APC's pizza receives rave reviews from its customers.

Hungry Howie's is closing down most of its restaurants in Pennsylvania, but Hungry Howie's is not in the same pizza market segment as American Pizza Company. The closure of the restaurants should not significantly impact APC's business in Pennsylvania.

The discount rate used by management could be a little low given the current economic conditions. The use of a lower rate could lead to management's estimate being slightly higher than would otherwise be expected.

Upon reviewing budgets set by APC's management, you discover evidence that APC plans to follow through with its planned restaurant growth.

Management has used a different model in the past when preparing the estimate for its reacquired franchise rights account. The estimate for this account would be lower when using the old model. Management justified the change by saying that the model used this year is the model used by the majority of its competitors.

Previously Viewed Evidence

As of the date of your review, APC appears to have the economic ability to follow through with its planned restaurant growth.

An interview with the person who prepared the fair value estimate indicated that the CEO of APC expressed a desire for the estimate to be as high as possible. The preparer stated that no one exerted undue influence on him, though, and the preparer does not have any incentives to overstate the estimate.

The management of APC did not consider using a third party to prepare the estimate.

American Pizza Company's marketing expenses have not increased significantly over the past three years.

The CFO of APC tells you about the company's plans relative to reacquired franchise rights. The plan appears to be consistent with the assumptions used in management's estimation model.

American Pizza Company focuses on a dine-in experience as opposed to the traditional pizza delivery business.

The person who prepared APC's fair value estimate does not have prior experience in preparing fair value estimates.

The increase in fuel costs has caused an increase in the expense ratio of other pizza companies, but APC focuses on creating dine-in restaurants. High fuel costs do not significantly affect APC's expense ratio.

The model used by management is consistent with what companies in other industries use when estimating reacquired franchise rights. The model appears to be the standard model used by over 95% of companies when estimating reacquired franchise rights.

A detailed examination of American Pizza Company's history shows that the company meets its target growth rate approximately 80% of the time, but its growth rate during the other 20% of the time is only two restaurants per year.

You determine that there is only a moderate risk associated with the expected future cash flows related to the reacquired franchise rights account.

Restaurant franchises similar to American Pizza Company have been growing at a rate of 3.5 restaurants per year. This rate is in contrast to the projected growth rate of 4 restaurants per year for American Pizza Company.

You ask a specialist in your firm to prepare a benchmark estimate. His estimate is lower than management's fair value estimate.

You review the minutes of APC's last two board meetings but do not find any mention of management's intentions relative to the reacquired franchise rights account.

The model used by management is the same model used by other companies in the pizza franchise industry and is consistent with the model used by APC's main competitors.

You interview some of American Pizza Company's lower level accountants, but they have no knowledge of how the reacquired franchise rights account is prepared.

Management's estimate appears to be moderately to highly sensitive to changes in the basic assumptions used to calculate the estimate.

APC produces pizzas of higher quality than most other pizza franchises.

You compile a report which suggests that Pennsylvania could be saturated with pizza restaurants.

You spend time preparing a benchmark model to compare the output with management's estimate. Management's estimate appears at the high end of your reasonable range.

APC's controller produced the fair value estimate.

You test management's mathematical calculations and formulas. You do not discover any errors.

The use of fair value for the reacquired franchise rights account is appropriate and conforms with GAAP.

The demand for high quality pizza is decreasing due to the current economic environment. Although APC produces pizzas of generally higher quality than most pizza chains, the company's pizza product would be considered on the low end of the high quality pizza scale.

There is a lack of objective data that can be used when calculating the estimate for the reacquired franchise rights account.

Do you wish to continue searching for more evidence related to this fair value audit?

You have now viewed all of the available audit evidence [click this button](#) to finalize the audit and provide your opinion.

Fifth (Final) Screen of Evidence (No Documentation Condition)

Client Information

Audit Information

Evidence Information

FINAL JUDGMENTS

1. Given the evidence available in the case, assess the risk that management's fair value estimate of \$24,620,000 for the reacquired franchise rights in Pennsylvania is materially misstated.

Very Unlikely										Very Likely
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Assume that you constructed a reasonable range for management's fair value estimate based on the evidence you just collected and reviewed. Where would management's estimate fall within your range?

- Below the lower bound of the range
- At the lower bound of the range
- Between the lower bound and the midpoint of the range
- At the midpoint of the range
- Between the midpoint and the upper bound of the range
- At the upper bound of the range
- Above the upper bound of the range

3. Given the evidence available in the case, what is the likelihood that you would recommend an adjustment to the client's reported book value for the reacquired franchise rights in Pennsylvania (Book Value = \$22,770,000)?

Very Unlikely										Very Likely
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Please list reasons supporting your answers to the three questions above.

Please click to continue

You will not be allowed to change your answers or view any of the previous information after pressing this button.

Dependent Variables

Questions

Statements that people use to describe themselves are given below. Please enter the response that indicates how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement.

	Strongly					Strongly
	Disagree					Agree
	1	2	3	4	5	6
I often accept other people's explanations without further thought.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel good about myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wait to decide on issues until I can get more information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The prospect of learning excites me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am interested in what causes people to behave the way that they do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident of my abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often reject statements unless I have proof that they are true.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discovering new information is fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take my time when making decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to immediately accept what other people tell me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people's behavior does not interest me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am self-assured.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends tell me that I usually question things that I see or hear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to understand the reason for other people's behavior.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that learning is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually accept things I see, read, or hear at face value.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not feel sure of myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually notice inconsistencies in explanations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most often I agree with what the others in my group think.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I dislike having to make decisions quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have confidence in myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not like to decide until I've looked at all of the readily available information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like searching for knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I frequently question things that I see or hear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for other people to convince me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I seldom consider why people behave in a certain way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to ensure that I've considered most available information before making a decision.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy trying to determine if what I read or hear is true.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I relish learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The actions people take and the reasons for those actions are fascinating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Please click to submit response\(s\).](#)

Hurtt Professional Skepticism Scale

Questions

1. How confident do you feel about your assessment of management's fair value estimate for reacquired franchise rights in Pennsylvania?

Not Confident										Very Confident
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. To what extent do you trust the information provided by your client?

Do not at all trust										Highly Trust
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I felt that the time allocated by the audit manager to complete this task was reasonable.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How easy or difficult was this task for you to complete?

Very Difficult										Very Easy
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. I felt comfortable taking as many audit hours as necessary to complete this task.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. American Pizza Company is an important client for my firm.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. I was motivated to finish this task in as few audit hours as possible.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. I felt this case was a realistic example of the type of task I would be given in an audit work environment.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please provide your assessment of the riskiness of this client based solely on the information available to you in this case.

Not Risky At All										Very Risky
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. I am satisfied that the evidence I collected in this task was sufficient to have a reasonable basis for forming the opinions I expressed in this study.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. I would have spent more time on the audit if my audit manager had budgeted more time for this task.

Strongly Disagree										Strongly Agree
1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Covariates

Questions

Question 1 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
I am strongly committed to the goal of being accurate in this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 2 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
It is hard to take the goal of making the client happy seriously in this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 3 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
Quite frankly, I don't care if I make the client happy in this task or not.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 4 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
It wouldn't take much to make me abandon the goal of being accurate in this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 5 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
I think the goal of being accurate in this task is a good goal to shoot for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 6 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
Quite frankly, I don't care if I am accurate in this task or not.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 7 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
I am strongly committed to the goal of making the client happy in this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 8 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
It is hard to take the goal of being accurate seriously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 9 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
It wouldn't take much to make me abandon the goal of making the client happy in this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Questions

Question 10 of 10

	Strongly				Strongly
	Disagree				Agree
	1	2	3	4	5
I think the goal of making the client happy is a good goal to shoot for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please click to submit response(s).

Goal Congruence Questions

Questions

For each of the following, choose one of the two descriptions on the right that best describes the item on the left.

Sweeping the floor	<input type="radio"/> Moving a broom	<input type="radio"/> Being clean
Attending a family reunion	<input type="radio"/> Going to the event	<input type="radio"/> Respecting tradition
Skydiving	<input type="radio"/> Demonstrating one's daringness	<input type="radio"/> Jumping out of an airplane
Making an expensive purchase	<input type="radio"/> Doing something for one's pleasure	<input type="radio"/> Swiping a credit card
Staying home to study	<input type="radio"/> Reviewing one's notes	<input type="radio"/> Exerting self-discipline
Recycling	<input type="radio"/> Caring for the environment	<input type="radio"/> Bagging paper, glass, and cans
Teaching	<input type="radio"/> Talking to students	<input type="radio"/> Educating people
Meeting new people	<input type="radio"/> Enhancing one's social network	<input type="radio"/> Small talk and shaking hands

Please click to submit response(s).

Construal Level Questionnaire

Final Questions

1. What is your age?

2. Are you male or female?

- M
- F

3. How many years of general work experience do you have?

4. How many years of auditing experience do you have?

5. Do you have any experience auditing fair value estimates ?

- Yes
- No

6. Have you taken any courses which cover fair value accounting ?

- Yes
- No

7. I currently work for:

- A local accounting firm
- A regional accounting firm
- An international accounting firm
- Other

8. What is your current position?

- Staff Auditor or Audit Junior
- Audit Senior
- Audit Manager
- Partner
- Other

Demographic Information