

AN EXPERIMENTAL EXAMINATION OF THE EFFECTS OF GOAL FRAMING AND  
TIME PRESSURE ON AUDITORS' PROFESSIONAL SKEPTICISM

Shani N. Robinson, B.B.A., M.B.A.

Dissertation Prepared for the Degree of  
DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2011

APPROVED:

Mary B. Curtis, Major Professor  
Nick Evangelopoulos, Minor Professor  
Jesse Robertson, Committee Member  
Carol Ann Frost, Committee Member  
Don Finn, Chair of the Department of  
Accounting  
James D. Meernik, Acting Dean of the  
Toulouse Graduate School

Robinson, Shani N. An Experimental Examination of the Effects of Goal Framing and Time Pressure on Auditors' Professional Skepticism. Doctor of Philosophy (Accounting), December 2011, 125 pp., 16 tables, 3 figures, references, 34 titles.

Despite the importance and prevalence of an emphasis on professional skepticism throughout auditing standards, evidence indicates that auditors often fail to exercise an appropriate degree of professional skepticism. Prior accounting research suggests that auditors' professionally skeptical behavior is affected by individual personality traits as well as situational (state) influences, whereby both factors contribute to auditor professional skepticism. Yet, prior research has primarily focused on trait skepticism; and little research to date has investigated the concept of state skepticism. The purpose of this research study is to experimentally investigate the impact of time pressure and trait skepticism on state skepticism, and to test a potential debiasing procedure on the impact of time pressure on state skepticism. In addition, this study examines the influence of both skepticism types on skeptical behavior.

This research offers several contributions to accounting literature and practice. First, I contribute to the existing debate regarding the influences of professional skepticism by providing evidence that professional skepticism may be categorized as a temporary state, induced by situational aspects, in addition to being classified as an enduring trait. Second, I identify certain situational conditions which create differences in the level of state professional skepticism exhibited within an auditing context. Lastly, my findings may also be important to audit firms as they consider tools within their training arsenal equipped to promote an appropriate level of professional skepticism among employees. If auditor skepticism can be influenced by the frames they are provided, then audit firms may create an environment that promotes consistency in auditors' application of professional skepticism, simply by engaging in goal framing.

Copyright 2011

by

Shani N. Robinson

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
1. INTRODUCTION .....	1
Motivation and Issue for Research .....	1
2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT .....	9
Traits vs. States .....	9
Traits .....	10
Professional Skepticism as a Trait .....	12
Traits and States: An Interactional Perspective .....	13
The Importance of States in Predicting Behavior .....	14
The Mediating Effect of States .....	16
The Effect of Time Pressure and Goal Framing on State Skepticism .....	19
Time Pressure.....	20
Framing.....	23
Goal Framing .....	26
3. METHODOLOGY .....	30
Research Design.....	30
Research Participants .....	31
Development of Experimental Instrument.....	33
Overview of Experimental Procedures .....	33
Manipulations .....	35

Experimental Task .....	36
Measuring and Testing Hypotheses .....	40
Variable Measurement .....	40
State Professional Skepticism .....	42
Development of a State Professional Skepticism Scale .....	43
Time Pressure .....	48
Goal Framing .....	48
Testing of Hypotheses .....	49
Validation and Pilot Testing .....	52
Pilot Testing and Preliminary Data Analysis .....	52
Pretesting the State Professional Skepticism Scale .....	53
Manipulation checks .....	53
Pilot Data Analysis – Hypothesis 2 .....	54
Pilot Data Analysis – Hypothesis 4 .....	55
Pilot Data Analysis – Hypothesis 5 .....	56
Modifications of Experimental Instrument Following Pilot Tests .....	56
<b>4. RESULTS .....</b>	<b>59</b>
Participant Demographics .....	58
Variable Construction and Validation .....	61
Manipulated Independent Variables .....	61
Time Pressure .....	61
Goal Framing .....	64
Measured Independent Variables .....	66

Trait Skepticism .....	66
State Skepticism Scale Construction .....	69
Dependent Variables .....	69
Covariates .....	71
Correlation Analysis .....	71
Hypotheses Testing .....	74
Hypothesis 1 .....	74
Hypothesis 2 .....	76
Hypothesis 3 .....	77
Hypothesis 4 .....	80
Hypothesis 5 .....	83
Supplemental Analysis .....	85
5. CONCLUSION .....	87
Discussion .....	87
Limitations .....	90
Future Research .....	92
APPENDICES .....	94
REFERENCES .....	117

## LIST OF TABLES

	Page
Table 1 – Mapping of Experimental Instrument to Hypotheses .....	41
Table 2 – Construction of the State Professional Skepticism Scale .....	45
Table 3 – Participant Demographics .....	59
Table 4 – Time Pressure Factor Analysis .....	62
Table 5 – Goal Framing Factor Analysis .....	64
Table 6 – Trait Skepticism Factor Analysis.....	66
Table 7 – Trait Skepticism Reliability Results .....	67
Table 8 – State Skepticism Factor Analysis .....	69
Table 9 – Correlation Table .....	73
Table 10 – Test Results for Hypothesis 1 .....	74
Table 11 – Test Results for Hypothesis 2 .....	77
Table 12 – Test Results for Hypothesis 3 .....	80
Table 13 – Test Results for Hypothesis 4 .....	81
Table 14 – Covariate Analysis for Hypothesis 4 .....	82
Table 15 – Test Results for Hypothesis 5 .....	84
Table 16 – State Professional Skepticism across Manipulated levels .....	85

## LIST OF FIGURES

	Page
Figure 1 – Research Framework.....	30
Figure 2 – Summary of Experimental Procedures.....	33
Figure 3 – Mediation Analysis.....	78



# CHAPTER 1

## INTRODUCTION

### Motivation and Issue for Research

Professional skepticism is a critical component of audit practice and current auditing standards direct auditors to remain skeptical throughout the duration of each audit engagement (AICPA 2002). Though various definitions of professional skepticism exist<sup>1</sup>, this research adopts the definition offered by SAS 99, which describes skepticism as “an attitude that includes a questioning mind and critical assessment of audit evidence” (AICPA 2002). Moreover, I define skepticism as evidenced by “auditor judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect based on the information available to the auditor” (Nelson 2009).

Despite the importance and prevalence of an emphasis on professional skepticism throughout auditing standards, evidence indicates that auditors often fail to exercise an appropriate degree of professional skepticism (PCAOB 2008). For instance, recent summary inspection reports of domestic public accounting firms performed by the Public Company Accounting Oversight Board (PCAOB) cite auditors’ lack of professional skepticism during one or more phases of the auditing process (PCAOB 2008). In addition, accounting researchers’ examination of select Accounting and Auditing Enforcement Releases (AAERs) by the Securities and Exchange Commission (SEC) concluded that lack of auditor professional

---

<sup>1</sup> Two general approaches to defining professional skepticism have emerged within academic research. While one definition is considered “neutral”, the other may be categorized as “presumptive doubt”, indicating a heightened assessment of risk that an assertion is incorrect, based on the information provided to the auditor (Nelson, 2009). The definition used within this study is most reflective of the presumptive doubt definition.

skepticism was the primary factor associated with various audit failures (Beasley et al. 2001; Louwers et al. 2008). Finally, SEC Chairman Doty's keynote address at the Global Dimension Conference on Audit Policy emphasized how breaches of auditor professional skepticism continue to surface in the United States and abroad. Specifically, he stated that inspections conducted by various international audit regulators (UK, Dutch AFM and Australian SEC) have also generated concerns regarding auditor professional skepticism (Doty 2011).

The occurrences described above illustrate a need for accounting researchers to consider what influences professional skepticism and how auditors' levels of professional skepticism may be improved upon. Prior research suggests that professionally skeptical behavior is influenced by individual personality traits, as well as situational "state" factors. For instance, Hurtt (2010) asserts that both trait and state skepticism influence an individual's skeptical mindset, further describing how a skeptical mindset influences skeptical behavior. Also, Nelson's (2009) model of professional skepticism illustrates how incentives, traits, knowledge and experience combine with evidential input to influence auditors' skeptical judgments and actions. While these models identify situational factors as one determinant of skeptical behavior, they do not discuss the relationship between trait and state influences of professional skepticism.

Distinguishing trait skepticism from state skepticism is essential because audit firms have the ability to impact situational factors. If professional skepticism is strictly a function of individual personality traits, then the most effective means of gaining professionally skeptical employees is to hire those who possess the trait. Further, trait categorization also presumes that organizations, such as audit firms, have little or no influence on shaping the professional skepticism of its employees.

On the other hand, if in fact professional skepticism is also a temporary state that may be aroused by situational aspects, then firms do have the opportunity to enhance the professional skepticism of employees via training, framing, or other instructional methods. Thus, one primary focus of this research is to distinguish between trait versus state professional skepticism.

In summary, the existing literature suggests that professional skepticism is a multifaceted concept which is influenced by a variety of personal, task and situational factors. However, what is not entirely clear is the relationship between trait and state professional skepticism<sup>2</sup>.

Additionally, prior literature has not yet fully examined state skepticism as a distinct variable, nor has the literature investigated specific environmental factors that likely influence state professional skepticism. My study is designed to bridge this gap in the literature in two ways. First, I investigate state skepticism as a mediator between trait skepticism and skeptical behaviors. Second, I examine two environmental factors that might affect state skepticism.

The results of my dissertation suggest that both trait professional skepticism and state professional skepticism influence skeptical behavior. I also find time pressure to be negatively related to state skepticism, such that greater time pressure is associated with lower state skepticism. In the following paragraphs, I further discuss the motivation and contributions of this research.

Based on the support found in prior literature, which suggests that professional skepticism is both a state and an individual trait, a few studies have attempted to provide a direct measure of professional skepticism via constructing skepticism scales (Hurt 2010; Shaub 1996) and providing a link between those scales and auditors' judgments and behaviors (Hurt et al. 2008; Fullerton and Durtschi 2005). While results are mixed concerning the ability of these

---

<sup>2</sup> Note that Hurt (2010) includes both of these variables in her framework, without specifying a relationship between the two.

scales to measure professional skepticism, the instruments provide a basis for further understanding the antecedents to skeptical behavior. They also suggest that, although skepticism is influenced by individual traits, situational factors such as incentives, play a role in determining auditors' judgments (Beeler and Hunton 2002; Gramblin 1999; Houston 1999; Hackenbrack and Nelson 1996; Trompeter 1994), and consequently, those judgments involving auditors' professional skepticism (Nelson 2009). Hence, even auditors with similar levels of trait skepticism may exhibit different judgments and/or behaviors in differing contexts.

One such contextual factor is that of time pressure. Audit firms often use budgets to create (or increase) pressure for auditors to execute efficient audit engagements. However, it is possible that time pressure may act to reduce the level of skeptical behavior displayed during an audit. For instance, while auditors may deem additional evidence collection necessary for audit effectiveness, they may forego further testing in order to satisfy budgetary targets, thereby behaving more efficiently than effectively. Auditing standards suggest that one aspect of professional skepticism is a "critical assessment of audit evidence" (AICPA 2002), thus it is possible that placing a greater emphasis on efficiency than effectiveness is associated with a reduction in skeptical behavior.

Given that time constraints are often present in an audit setting (Cook and Kelley 1988; Waggoner and Cashell 1991), one question is whether or not steps may be taken to increase auditors' state professional skepticism, when a heightened degree of skepticism is warranted. For example, prior research in social psychology has found that an individual's willingness to engage in a particular behavior may be largely influenced by the type of frame they receive. Specifically, to encourage or promote a particular behavior, emphasis can be placed on either the benefits of engaging in the behavior, or the consequences of not engaging in the behavior. These

intentional manipulations are generally referred to as framing (Tversky and Kahneman 1981), and the particular frame specified above is most closely associated with “goal framing” (Levin, Schneider and Gaeth 1998).

Drawing from research in social psychology, health, and communication, I predict that auditors may exhibit differing levels of professionally skeptical behavior depending on the type of frame provided to them regarding the potential consequences of professionally skeptical behavior. Specifically, I assert that auditors presented with negative frames (those emphasizing the negative consequences of not behaving professionally skeptical) will exhibit greater professional skepticism than auditors presented with positive frames (those emphasizing the benefits of behaving professionally skeptical). This assertion is based on the idea that negative messages are more persuasive than positive messages in motivating certain behaviors (Salovey and Williams-Piehota 2004; LeBoeuf and Shafir 2003; Friestad and Wright 1994; Shafir 1993; Taylor 1991; Meyerowitz and Chaiken 1987; Kahneman and Tversky 1981).

Motivating professionally skeptical behavior is particularly important given the enormity of potential consequences that may result from auditors’ failure to apply appropriate levels of professional skepticism. Some of these consequences include: audit failures, audit firm litigation, loss of firm reputation, and financial loss for a multitude of firm stakeholders. The PCAOB’s recent summary of inspection reports attributed a substantial number of audit deficiencies to auditors’ failure to exercise the appropriate level of professional skepticism while carrying out audit procedures and evaluating audit evidence (PCAOB 2008). Mark Olsen, PCAOB chairman, has also expressed his concerns regarding auditors’ behavior in light of the recent economic downturn. He asserts that the risk of financial fraud increases during tough economic times, stating that auditors need to “exert more professional skepticism during times of

economic downswing.” The problem is not isolated and a lack of professional skepticism as a trend has emerged in various domains. In fact, based on a sample of 45 SEC enforcement actions against auditors, the SEC notes that 60% of identified audit failures were the result of a lack of professional skepticism (Beasley 2001). Moreover, the Enron debacle further demonstrates the adverse effects that can occur when auditors fail to behave professionally skeptical. For instance, Enron’s financial disaster might have been abated had Arthur Andersen auditors demonstrated a higher degree of professional skepticism.

In summary, extant literature suggests that, in various instances, auditors have failed to exhibit the heightened professional skepticism required by the context or audit situation. Yet, research that identifies ways to improve upon auditors’ professional skepticism is scant and no study, to date, has experimentally investigated potential means or techniques for improving auditor skepticism under conditions of real world constraints, such as time pressure.

The purpose of this study is two-fold. First, I distinguish between trait versus state<sup>3</sup> professional skepticism to examine how both factors affect skeptical behaviors. After having established a measure of state professional skepticism, I investigate how time pressure and goal framing of professionally skeptical behavior may act to influence auditors’ state skepticism.

This research offers several contributions to accounting literature and practice. First, I contribute to the existing debate regarding the influences of professional skepticism by providing evidence that professional skepticism may be categorized as a temporary state, induced by situational aspects, in addition to being classified as an enduring trait. Only recently has a scale been developed to explicitly measure professional skepticism (Hurt 2010) and that particular scale purports to capture professional skepticism as a trait, rather than a state variable. I modify

---

<sup>3</sup> Prior research defines “traits” as relatively enduring characteristics of people, while “states” are impacted by contextual and situational factors (George, 1991).

the scale to capture a situational measure of state skepticism; thus, my results should assist researchers in investigating other influences over skepticism. Second, I identify certain situational conditions which create differences in the level of state professional skepticism exhibited within an auditing context. This study is the first to consider the joint effects of time pressure and goal framing on auditors' behavior. Third, drawing on research in social psychology, health and persuasive communication, this research is among the first to integrate goal framing theory within an auditing context and offer goal framing intervention as one potential solution to increasing auditors' professional skepticism. Fourth, this study empirically tests a portion<sup>4</sup> of Nelson's (2009) model (proposed but not fully tested) of professional skepticism, using time pressure as an incentive which influences skeptical actions. In fact, Nelson specifically describes pressure to stay within time budget as an example of one type of auditor incentive that influences skeptical behavior.

Lastly, my findings may be important to audit firms as they consider tools within their training arsenal to promote an appropriate level of professional skepticism among employees. If auditor skepticism can be influenced by the frames they are provided, then audit firms may create an environment that promotes consistency in auditors' application of professional skepticism, simply by engaging in goal framing.

To examine the effects of goal framing and time pressure on state professional skepticism, I utilized a 2x2 experimental design, with goal framing (positive/negative) and time pressure (high/low) as the primary independent variables. In addition, I measure trait skepticism to determine its effect on skeptical behaviors as well as its interaction with the primary

---

<sup>4</sup> Nelson (2009) constructs a full model of the determinants of Professional Skepticism in Audit Performance, incorporating influences such as: evidential input, incentives, traits, knowledge and audit experience and training. The focus of my study is not the full model, but rather two dimensions of the model related to incentives (such as time pressure) and traits.

independent variables. The experiment is designed to elicit behavior via a context that represents the demands for both efficiency and effectiveness found in a typical audit. Specifically, participants feel pressure to be effective (such that participants arrive at the correct answer by evaluating evidence in a professionally skeptical manner), but also efficient (the answer is derived in a timely manner). As such, greater chance for incentives are provided to participants that complete the task in the timeliest manner, however, only those with the correct answer have an opportunity to receive the experimental incentive.

I manipulated goal framing by providing participants with either a positive frame (which emphasizes the benefits of engaging in skeptical behavior) or a negative frame (which emphasizes the consequences of not behaving professionally skeptical). Time pressure was manipulated such that those under high time pressure received additional incentives for taking less time to complete the task and those under moderate pressure are informed that the time available is sufficient. The dependent variables relate to two actions identified in prior literature as skeptical behaviors. They include additional evidence collection and contradiction detection.

The participants for this experiment consisted of auditing students at large Southwestern universities. Students were randomly assigned to one of four experimental conditions. Each student read a hypothetical case scenario and completed the task of evaluating the reasonableness of management's estimate for bad debt expense. By the time of the experiment, students had covered concepts of professional skepticism in their auditing course.

The remainder of this dissertation is organized as follows. Chapter 2 provides a review of three streams of literature (professional skepticism, time pressure and goal framing) and offers detailed hypotheses development for each stream of literature. Chapter 3 discusses the research methodology, including experimental manipulations, tasks and procedures. Chapter 4 provides a



discussion of the experimental results and chapter 5 offers concluding remarks, limitations, and suggestions for future research.

## CHAPTER 2

### LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This research has two primary goals. First, I distinguish between trait and state professional skepticism and examine the relationship of each factor on skeptical behaviors. Second, I consider two potential influences of state skepticism; time pressure and goal framing. Time pressure is an important variable of study and has been widely explored within multiple research settings. Drawing on literature from psychology and auditing, I discuss the anticipated effects that time pressure may have on auditor behavior. Framing has also been studied in various disciplines, although relatively little in accounting. In the framing discussion below, I draw on literature from areas of health, communication, psychology, organizational behavior, and auditing to develop my hypotheses.

I begin with the following sections to provide a theoretical basis for distinguishing between individual traits and temporary states. Within these sections, I discuss two primary perspectives on how behavior may be influenced and offer hypotheses relevant for each perspective. Last, I address my second research goal concerning two situational influences on state skepticism, time pressure and framing.

#### Traits verses States

Psychology literature identifies two general perspectives regarding the influences of human behavior. Those perspectives are: 1) A dispositional (trait) view, or 2) An interactional view. These perspectives are collectively associated with a term characterized as “The person-situation debate” which has persisted within psychology research for many decades (Digman

1990). At the heart of the debate is the idea that behavior may be influenced by either dispositional or situational factors, or some combination of both. I discuss each of the perspectives underlying the trait-state<sup>5</sup> debate, ultimately illustrating how an interactive approach is most relevant for this research.

## Traits

The trait perspective (i.e. trait theory) suggests that attitudes and behavior are most influenced by an individual's distinctive personality characteristics. Indeed, a large body of research has extensively studied personality traits and various theoretical frameworks exist regarding the influence of traits on attitudes and behaviors (see Costa and McCrae 1992 for a review of this literature). While detailed accounts of this literature are beyond the scope of this paper, it is critical to understand some of the basic definitions that are often used to describe personality traits.

At the most general level, traits refer to enduring individual differences in thoughts, feelings, and behavior that represent the "core of personality" (McCrae and Costa 1996). Moreover, traits have previously been described as "critical and defining characteristics" of personality (Buss 1989). Personality theorists suggest that the longitudinal stability of traits offers empirical evidence to support these definitions (McCrae and Costa 1990). In addition, traits have been studied in conjunction with leadership (Gian and David 2007; Heyi et al. 2007; Washington et al. 2006), managerial performance (Robie et al. 2008), the five-factor personality index (Digman 1990), and cross-cultural personality research (Church 2000).

Traits also have been studied in auditing research. One of the most widely studied dimensions of personality in this line of research is the "type A" versus "type B" personality

---

<sup>5</sup> Debates of this nature have also been referred to as person-situation debates (Ross 1977).

trait<sup>6</sup>. For instance, Kelley and Margheim (1990), investigate the impact of time budget pressure on dysfunctional audit behavior, and find that staff auditors were less likely to engage in time underreporting when they were under the supervision of a senior with lower Type A personality<sup>7</sup>.

Also, Choo (1986) considers the effects of different personality types on job stress and job performance. Specifically, Choo's first experiment examines the effects of four personality dispositions on job-related stress: Type A/B personality, locus of control, commitment, and challenge<sup>8</sup>. The results show a positive significant relationship between Type A personality and auditors' perceived job stress. In Choo's second study, the relationship between job stress and job performance is examined, and findings illustrate an inverted U relationship between stress and job performance. In considering the combined results of both studies, the author suggests (but does not test) that personality characteristics may be an important predictor of individual auditor performance.

Another personality variable of interest in audit research is that of locus of control. Locus of control may be defined as "the extent to which persons perceive contingency relationships between their actions and their outcomes" and individuals may be categorized as "internals" or "externals," depending on the degree to which they perceive control over their outcomes (MacDonald et al. 1970). Curtis and Taylor (2009) investigate how personality characteristics influence auditor behavior in a whistleblowing context. Their study evidences that both locus of control and ethical style are significant predictors of whistleblowing intentions.

---

<sup>6</sup> Individuals with the type A personality trait have been described as having high levels of urgency, competitiveness, need for achievement and aggressiveness (Choo 1995).

<sup>7</sup> These results refer to the "state" of working under a supervisor with Type A personality. The authors also tested whether staff auditors' personality type moderated the relationship between time pressure and staff auditors' behavior, however no significant relationship was found.

<sup>8</sup> Choo describes the variables as follows: 1) control - one's perceptions about their ability to influence outcomes, 2) commitment - a general sense of involvement and persistence in a task, 3) challenge - a belief in change over stability as well as a general sense of openness (1986, 19).

Taken together, these findings support the idea that auditor behavior may be influenced by individual personality traits. The particular trait of interest to this study is that of professional skepticism and the concept of trait professional skepticism is discussed in the section below.

### Professional Skepticism as a Trait

Professional skepticism has become an increasingly important variable of study in auditing research and is discussed throughout various auditing standards. While many definitions of professional skepticism exist, this research defines professional skepticism as “an attitude that includes a questioning mind and critical assessment of audit evidence” (SAS No. 99). Additionally, I adopt the view that skepticism may be evidenced by “auditor judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect based on the information available to the auditor” (Nelson 2009).

Prior research has encountered some difficulty in measuring professional skepticism as the term is multi-faceted and has been defined in several, sometimes conflicting ways. Nevertheless, one recent study attempts to provide a direct measure of “trait skepticism” by drawing on characteristics found within auditing standards and a variety of research domains (Hurt 2010). While Hurt (2010) acknowledges that professional skepticism may be considered both a trait and a temporary state, her definition of professional skepticism is that of a multi-dimensional construct which “characterizes the propensity of an individual to defer concluding until the evidence provides sufficient support for one alternative/explanation over others” (Hurt 2010). Moreover, she asserts that her scale does not attempt to measure “state” skepticism, but rather provides an ex ante measure of an individual’s level of trait professional skepticism. Hurt (2010) identifies six specific dimensions of professional skepticism, which are: 1) a questioning

mind, 2) suspension of judgment, 3) search for knowledge, 4) interpersonal understanding, 5) self-esteem, 6) autonomy. A few studies have utilized the Hurtt (2010) skepticism scale demonstrating positive correlations between trait skepticism and auditor performance (Hurtt 2010; Hurtt et al. 2008).

These findings offer support for my first hypothesis, which proposes a link between trait skepticism and skeptical behaviors. Based on the evidence above, I assert that professional skepticism is an individual personality trait and that trait skepticism influences auditor behavior. As such, Hypothesis 1 addresses the relationship between trait skepticism and skeptical behaviors.

Hypothesis 1: Individuals with higher levels of trait professional skepticism will exhibit more skeptical behavior than those individuals with lower levels of trait professional skepticism.

#### Traits and States: An Interactional Perspective

While the trait concept has dominated personality research from its origins, the concept of states was introduced within personality research some 30 years later (Steyer et al. 1999). In contrast to relatively stable and enduring personality traits, states are considered temporary conditions, which may be influenced by situational or contextual circumstances.

Psychodynamic theory acknowledges the dynamically interactive effects that situations may have on individual behavior (Mischel 1968). Some theorists argue that traits are not entirely useful descriptions of personality because behavior primarily depends on situational influences (Steyer et al. 1999). Similarly, latent state-trait theory (LST) proposes that behavior is dependent upon traits, situational characteristics, and the interactions between persons and situations, and offers a useful methodological tool for testing relationships between traits, states and behavior (Steyer et al. 1999).

## The Importance of States in Predicting Behavior

Prior work in psychology emphasizes the importance of considering contextual influences on behavior. Notably, Veroff (1983, pg. 332) argues that behavior represents an interaction of individuals' personality and the situations they are in, such that it is "impossible to isolate a unitary stable personality factor outside of its various contexts." In discussing the accumulative nature of personality, he suggests that even core personality characteristics may change if situational influences are strong enough.

Within the realm of organizational behavior, contextual explanations (in conjunction with or separate from personality) for behavior have been studied extensively and several studies have focused on situational determinants of attitudes (Staw, Bell and Clausen 1986) and behavior (Johnson 1999). In regards to attitudes such as job satisfaction, or behaviors such as job performance, organizational research suggests that explanations may be derived via the context of the situation (George 1992).

Davis-Blake and Pfeffer (1989) make strong arguments regarding the influence of situations in organizational contexts, asserting that dispositional effects on behavior are "just a mirage" and that individuals may adapt their dispositions to fit into their current organizational context. They further add that because organizational contexts represent strong situational influences, they constrain the potential effects that dispositions might have on behavior (George 1992).

In auditing, Tsui and Gul (1996) were among the first to examine the joint effects of ethical reasoning and the personality variable, locus of control, in audit conflict situations. Their findings reveal that a significant relationship exists between locus of control and auditor

behavior, and that the relationship is moderated by ethical reasoning. This study emphasizes the interactive nature of personality traits (such as locus of control) and contextual influences (ethical reasoning<sup>9</sup>) on auditors' behavior.

In summary, while traits may have strong effects on behavior, evidence suggests that state variables are also important determinants of behavior. While extant research has studied professional skepticism as a trait, this research simultaneously examines professional skepticism as both a trait and state variable. While prior literature on professional skepticism has focused primarily on traits, there is limited research which investigates state variables, thus creating a gap in the literature for fully understanding the factors that influence professionally skeptical behavior. In order to explicitly distinguish between trait and state professional skepticism, I develop a measure of state professional skepticism and examine its effects on skeptical behaviors. The following hypothesis seeks to establish a direct link between state professional skepticism and skeptical behaviors.

Hypothesis 2: Individuals with higher levels of state professional skepticism will exhibit more skeptical behavior than those individuals with lower levels of state professional skepticism.

#### The Mediating Effect of States

A separate, but related concept is whether or not state professional skepticism offers additional explanatory power over trait skepticism in predicting skeptical behaviors. In other words, can state professional skepticism influences be more predictive than trait influences in explaining professionally skeptical behavior? This is an empirical question which has not been previously investigated in the literature. It is important to note that considering which factors

---

<sup>9</sup> Note that prior literature describes ethical reasoning as a multi-stage process; whereby each component of the reasoning process can be influenced by both personality traits and contextual factors (Jones, Massey, and Thorne 2003; Rest 1986).



(trait verses state) are most influential over behavior is not simply important for the purpose of advocating one over the other. Indeed, George (1992) cautions against research which seeks to debate whether person or situations variables are most important predictors of behavior, as both are important and should be considered<sup>10</sup>.

However, it is possible that state professional skepticism may help to explain why individuals with similar trait skepticism levels exhibit differences in skeptical behavior. This concept is not new and prior research has investigated the potential for states to incrementally add to the predictive validity of trait influences. For example, Kluemper, Little and DeGroot (2009), building on the concept that optimism has both trait and state components, investigate the effects of state optimism verses trait optimism on job performance.

Additionally, perhaps state variables are most useful for explaining certain types of behavior, while trait variables are more useful for others. For instance, Kluemper et al. (2009) suggest that while trait optimism relates to the degree of optimism that individuals generally experience, state optimism captures the variability of individual optimism in light of contextual or situational circumstances. Their suggestion is largely based on the work of Peterson (2000), who explains the difference between big and little optimism, describing big optimism as a trait that refers to less than specific expectations and little optimism as a state which relates to specific outcomes which are preferable because of their context-specific nature (Kluemper et al. 2009, pg. 211).

Research in organizational behavior makes similar inferences; describing the general verses specific nature of traits verses states, respectively. For instance, Epstein and O'Brian (1985, pg. 533) suggest that traits are most useful to predict "aggregated behaviors," such as

---

<sup>10</sup> To this point, George cites the person-situation debate which ensued within psychology literature for more than 40 years, in attempts to dichotomize dispositional verses situational influences.

considering behavior which is averaged across multiple situations. Further, some theorists propose that traits may have fairly generalized effects on behavior (Sanford 1963; Allport 1966).

The distinction between general versus specific behaviors is vital within organizations because organizations may be more concerned with individuals' ability to exhibit a particular behavior in a specific situation, as opposed to the general inclination to exhibit behavior across all situations (George 1992). For example, if an individual consistently behaves in the same manner, without regard to changes in situations, they may not be properly adjusting their behavior to take into account important contextual changes. This is likely the case in an auditing environment, because professionally skeptical behavior should be exercised based on the nature of the situation (i.e. depending on the suspected level of fraud or errors encountered within a particular audit), rather than generally exercised across all situations.

Prior research suggests that how one reacts to a particular situation is influenced by their personal characteristics. This point brings about another important reason for considering states in addition to traits when studying behavior. George (1992) explains that states are the immediate precursors to behavior. Moreover, it is the trait that influences state, and traits operate on behavior through their influence on internal states (Nesselroade 1988; George 1991). Thus, research suggests that not only do states influence behavior, but they act as mediators in the relationship between traits and behavior (George 1992). As a result, it is plausible that trait professional skepticism influences state professional skepticism and that state professional skepticism is the immediate precursor to skeptical behavior. In accounting, various researches have investigated traits versus states in influencing behavior, though not specifically proposing states as a mediator between traits and behavior. For instance, Libby and Luft (1993) assert that decision performance in accounting is influenced by four factors: ability, knowledge,

motivation, and environment. Hence, the first three factors represent personality traits while the fourth represents a state (situational) factor. Also, Bonner (2007) describes three general categories of factors that affect the quality of accounting judgment and decision making: person, task, and environmental variables. Curtis and Payne (2008) examine influences of auditor decisions regarding technology acceptance. They find that both personality characteristics (risk aversion and perceptions of budgetary pressure) and environmental factors (budget period and superior influence) have an effect on decisions. Further, when state variables (such as firm interventions) are not present, individual auditor traits determine implementation decisions.

In summary, accounting literature generally acknowledges the important influence that both traits and states have over judgment and behavior. Yet, most of this literature suggests that traits and states operate independently on behavior, thereby not fully acknowledging the potential for traits to influence states. For instance, although Curtis and Payne (2008) investigated the influence of traits (in either the presence or absence of states) on behavior, they did not consider states as a possible mediator in the relationship between traits and behavior. The potential mediating influence of state variables has not received adequate attention in prior accounting research, and this study addresses the gap in the literature. Hypothesis 3 addresses these assertions.

Hypothesis 3: State professional skepticism partially mediates the relationship between trait professional skepticism and skeptical behavior.

### The Effect of Time Pressure and Goal Framing on State Skepticism

The preceding sections provided a discussion of trait versus state skepticism and the potential for both measures to influence skeptical behavior. In this section, I discuss two

environmental factors that may influence state skepticism: time pressure and goal framing. As state skepticism has received little attention in prior auditing research, it is important to consider what factors contribute to a temporary state of professional skepticism. Extant research identifies time pressure as an environmental variable (Bonner 2007) inherent in the auditing environment that has both positive and negative effects on auditors' judgment and decision making (DeZoort and Lord 1997).

The element of time pressure most relevant to this research is the potential for auditors to perform reduced quality audit work as time pressure increases from moderate to excessive levels. Thus, I suggest that under high levels of time pressure, auditors may be inclined to behave less skeptically. However, a review of literature outside of the accounting discipline demonstrates that goal framing of a particular behavior can be used to promote the behavior itself. As such, the integration of goal framing literature within this context is put forth as one potential way to increase auditors' professional skepticism. In the next sections, I provide a review of the literature related to time pressure and goal framing, along with related hypotheses for the suggested relationships.

### Time Pressure

Prior research has emphasized the importance of considering time pressure when studying auditor judgment and behavior (Shapeero et al. 2003; Waggoner and Cashell 1991; DeZoort and Lord 1997; Margheim and Pany 1986; Rhode 1978; Alderman and Deitrick 1982). Indeed, practicing auditors, particularly those in public accounting, are subject to pressures related to fees and deadlines (Glover 1997). The auditor's conflict is evidenced by the need to complete audit work effectively, yet in a timely manner. This research explicitly considers how

time pressure affects auditors' state professional skepticism. Experimentally investigating the effects of time pressure is important for emulating real world constraints that auditors often face.

DeZoort (1998) describes time pressure as a prevalent feature in modern accounting environments and asserts that amongst all of the different pressure types, time pressure has been the most widely studied in accounting research (See DeZoort and Lord (1997) for a review of pressure research). Solomon and Brown (1992) distinguish between two general types of time pressure that may arise for auditors in a typical audit setting. The first is pressure related to time budgets and the second comes from time deadlines. Time budget pressure stems from the need to minimize overall audit hours, without regard to the actual date that the work is done, whereas time deadline pressure entails the need to complete a task by a specific point in time (Kelley et al. 1999). Research has shown that accounting professionals experience both forms of pressure (DeZoort 1998). While some research has focused on positive outcomes of time pressure (Glover 1997)<sup>11</sup>, the majority of extant research has centered its attention on the potentially deleterious effects that time pressure has on auditors' judgment and behaviors.

Rhode (1978) was among the first to provide evidence about the effects of time pressure on auditor performance. His study, performed under the direction of the Commission on Auditors' Responsibilities, generated widespread debate regarding how auditors respond to time pressures in the audit setting. Results obtained from a survey of 1,526 AICPA members indicated that time budget pressure was the primary reason for auditors' premature sign-off on audit reports and performance of reduced quality audit work (which does not meet requisite audit firm standards). Another noteworthy finding of this study was that nearly half of the auditors surveyed believed that time pressure had a negative impact on auditor performance. This is

---

<sup>11</sup> Specifically, Glover (1997, 214) found that time pressure reduced, but did not eliminate, the dilution effect of auditor judgment.

important because even auditors' perceptions of being under time pressure, without regard to actual pressures, likely influence their behavior.

Given some of the disturbing findings from the (1978) survey, several researchers conducted follow-up studies to substantiate the findings (Waggoner and Cashell 1991; Alderman and Deitrick 1982). Results of subsequent studies were generally consistent with Rhodes, suggesting that time budgets do influence auditor behavior and that auditors may respond to time pressure by reducing the quality of audit work, prematurely signing off on audit procedures, or underreporting the time taken to complete audit tasks (Waggoner and Cashell 1991; Alderman and Deitrick 1982).

While underreporting time is an undesirable effect of time pressure, it may not have an immediate direct effect on audit quality. However, acts such as premature sign-offs and reduced effectiveness of audit procedures can certainly reduce overall audit quality and are therefore the focus of this research. Specifically, research provides empirical evidence that time pressure has an inverted u-shaped relationship with performance, such that both extremely low and high time pressure is associated with poor performance, while moderate time pressure may actually improve performance<sup>12</sup>.

McDaniel (1990) investigated the effects of time pressure on auditors' efficiency and effectiveness while performing audit program tests of inventory under four levels of time pressure. Findings revealed a main effect for time pressure such that as time pressure increased, participants exhibited behavior that was more efficient, but less effective. Also, Choo (1995) tested three competing theories of auditors' stress and subsequent judgment performance, using time pressure conditions to operationalize mental stress levels. He found that, from low to

---

<sup>12</sup> Kelley and Margeheim (1990) also demonstrate an inverted u-shaped relationship for the effects of time pressure, however their study finds this relationship to be true for auditors underreporting of audit time, but not for effectiveness of auditor performance.

moderate levels of time pressure, auditors' judgment performance improved; however, as time pressure increased from moderate to high levels, auditors exhibited poorer quality judgments. Choo reasons that the decline in judgment quality is a result of auditors' inability to effectively utilize relevant cues when time pressure reaches extreme levels<sup>13</sup>.

While not specifically testing an inverted u-shaped relationship between time pressure and performance, several other studies provide strong evidence that higher levels of time pressure lead to decreased audit quality. For instance, (Kelley et al. 1999) surveyed staff and senior auditors regarding their perceptions of time budget and deadline pressure. Overall, results showed that both forms of time pressure reduce the effectiveness of auditor performance and overall audit quality by a "small to moderate amount" (pg. 122). Asare et al. (2000) demonstrated that time pressure, in the form of a time budget, decreased both the depth and extent of auditor testing. The authors argue that their findings support auditors' use of filtration strategies of evaluating evidence, such that auditors evaluate less evidence under time pressure when choosing among potential hypotheses. Several other studies have illustrated that time pressure is associated with reductions in audit quality (Kelley et al. 1999; Otley and Pierce 1996; Malone and Roberts 1996).

In summary, while time constraints are integral cost containment strategies adopted within audit practice, prior research evidences several adverse consequences that time pressure has on auditor performance. Empirical evidence consistently demonstrates that time pressure influences the way in which auditors evaluate evidence in support of the ultimate audit opinion (Alderman and Deitrick 1982; Rhode 1978). Moreover, as time pressure increases from moderate to extreme levels, auditors are less likely to carefully consider all of the information available to them, leading to less effective behaviors. These less effective behaviors are

---

<sup>13</sup> This logic is derived from Easterbrook's cue utilization theory.

specifically related to how auditors evaluate evidence and one specific component of professional skepticism relates to evidence evaluation. As such, I assert that when time pressure reaches extreme levels, it decreases an auditors' professional skepticism. Indeed, one specific dimension of many professional skepticism definitions relates to how auditors evaluate evidence in conducting auditing tasks. Hypothesis 4, presented below, proposes a negative relationship between time pressure and auditor state skepticism.

Hypothesis 4: Individuals under high time pressure will exhibit lower levels of state professional skepticism than individuals under moderate time pressure.

### Framing

Given the dynamic nature of the audit environment, DeZoort (1998) has recommended that time pressure not be studied solely, but rather in conjunction with other variables. One goal of this study is to simultaneously investigate two factors that bring about state skepticism and prior research has been conducted along similar lines, jointly considering the effects of time pressure and other influential variables. For instance, Coram, Ng and Woodliff (2004) examine the effects of time pressure and risk of misstatement on the proclivity of auditors to engage in reduced audit quality acts, finding an interaction between time pressure and risk of misstatement for certain reduced audit quality acts. Two studies have examined the joint effects of time pressure and accountability on auditors' behavior, with mixed results. First, Glover, (1997) investigated how time pressure and accountability influenced auditors processing of irrelevant information, finding a main effect for time pressure, but not for accountability or for the interaction between time pressure and accountability. On the other hand, Asare et al.'s (2000)



work provides evidence that while accountability increases the extent of audit testing, time pressure has the opposite effect; yet no interaction was found between the two variables<sup>14</sup>.

In this study, I consider how goal framing, along with time pressure, creates a specific state of professional skepticism. Framing has been widely studied in areas of psychology (Tversky and Kahneman 1986; Tversky et al. 2004), health and persuasive communication (Salovey and Williams-Piehota 2004; Rothman and Salovey 1997; Meyerowitz and Chaiken 1987; Stoner 2010; Yan et al. 2010), and organizational behavior (Krishnamurthy and Nagpal 2008; Levin et al. 2002; Levin et al. 1998; Kuhberger 1995).

The general concept of framing originated within psychology from seminal research performed by Kahneman and Tversky (Tversky and Kahneman 1981; Kahneman and Tversky 1979). The authors compared decision preferences among differently framed choices, concluding that individuals are generally risk averse in gain situations (i.e. lives saved) and risk seeking in loss domains (i.e. lives lost). These findings illustrate that while preferences among alternatives should not differ based on the framing of information, individuals do often exhibit different perspectives based on frames. From these studies, much of extant research has investigated framing effects in the context of judgments and decision making. Though Tversky and Kahneman's Asian disease problem represents a specific type of framing, called risky choice framing, other framing types have been studied in prior literature and it is important to distinguish goal framing (which is used in this study) from other forms of framing identified in prior research.

Levin et al. (1998) distinguish between three general types of framing: risky choice, attribute and goal framing. The first, risky choice, is embodied within the Asian disease problem

---

<sup>14</sup> While both studies investigate joint effects of time pressure and accountability, Asare et al. (2000) explain that while Glover (1997) studied time limits, their study focused on time budgets (pg. 547).

and represents a type of frame in which the outcome of prospective choices (with different risk levels) are described in different ways. Second, in attribute framing, only a single characteristic (attribute) of an object is the focus of the framing manipulation. Levin and Gaeth (1988) conducted a study using attribute framing by asking individuals to evaluate the taste quality of ground beef, described in terms of either percentage lean or percentage fat. Their findings indicate that individuals provided with the lean percentage (positive) frame rated the ground beef as better tasting than individuals provided with the fat percentage (negative) frame. In general, studies of attribute framing have demonstrated that individuals rate the same alternative more favorably when it is described in more positive (rather than negative) terms.

Last, goal framing involves a situation in which individuals are encouraged to exhibit a particular behavior. The behavior is encouraged by focusing on either the positive outcomes of engaging in the act or the negative consequences that may result from not engaging in the act. Perhaps the most popular goal framing studies originate in the health domain whereby individuals are asked to perform specific acts such as preventative health care, detective health care or smoking cessation. In goal framing, both frames are utilized to elicit the same behavior, but the question is which type of promotion, positive or negative, is most persuasive in promoting the behavior (Salovey and Williams-Piehota 2004; Rothman and Salovey 1997; Meyerowitz and Chaiken 1987; Stoner 2010; Yan et al. 2010).

### *Goal Framing*

Regarding the effects of goal framing, while some researchers have found no effects (O'Keefe and Jensen 2006), an overwhelming number of studies have identified negative frames as strong catalyst of behavior (Reese et al. 1997; Banks 1995; Block and Keller 1995; Ganzach and Karsahi 1995; Newberry et al. 1993; Homer and Yoon 1992; Kahneman et al. 1990; Tversky

and Kahneman 1981; Meyerowitz and Chaiken 1987; Brewer and Kramer 1986). Goal framing has been widely studied in areas of health, persuasive communication and organizational behavior, but auditing research on goal framing is limited. Thus, one objective of this research is to integrate the goal framing and auditing literature in an attempt to better understand auditor professional skepticism.

In the health literature, many persuasive campaigns seek to promote certain behaviors in attempts to improve an individual's health and well-being. One of the most well-known appeals has been made in the area of self-breast examinations with work conducted by Meyerowitz and Chaiken (1987). Results of their study reported that women were much more likely to engage in self-breast examination when informed of the negative consequences of not getting the exam, rather than the positive outcomes of doing so. Meyerowitz and Chaiken explain their findings by suggesting that individuals are more motivated to avoid losses than to obtain gains of equivalent amount.

Other goal framing studies have found similar results for the effects of framing on health-related decisions. For instance, Robberson and Rogers (1988) make health appeals to encourage exercise among sedentary individuals. Their findings reveal a greater impact of the negatively framed information to influence intentions and severity among nonexercisers than the positively framed information. Similarly, Reese et al. (1997) note that when encouraging hearing-impaired veterans to keep hearing aids, participants were more likely to exhibit the behavior when they were informed of the losses that could result from not keeping the aids, then when informed of the benefits of keeping them.

In organizational behavior, evidence is also mixed concerning the effects of goal framing. For instance, Levin et al. (1998) conduct experiments, using college students, to test the effects

of all three types of framing. Results of their study showed significant effects for both attribute and risky choice framing, but not for goal framing. On the other hand, Ganzach and Karsahi (1995) examine goal framing effects for customers' use of credit cards. Their findings revealed that customers were more receptive to messages that were framed negatively (in terms of losses from not using credit cards) than positively (in terms of benefits gained from using credit cards). A six-month follow-up on the study showed that these results persisted over time.

Mueller and Anderson (2002) investigate goal framing by asking auditors to engage in the behavior of constructing a final list of potential explanations for an unusual variance. In their study, goal framing was manipulated by asking one group to exclude items from a starting list to arrive at the final list (negative frame), while the other group was directed to include items to appear on the final list (positive frame). Their results demonstrated that the negative (loss) frame to exclude items resulted in a significantly larger final list of items than the positive (gain) frame to include items. Similar results have been reported for the effects of inclusion versus exclusion strategies in the context of goal framing (Yaniv and Schul 2000; Huber et al. 1987); however these authors' definition of goal framing is not consistent with the traditional definition used in much of organizational behavior research (Levin et al 1998) and accordingly, not representative of the definition used in this study. Thus, I am aware of no auditing research that specifically investigates the effects of goal framing on auditor judgment and decisions in auditing.

While some auditing research has examined framing effects, most of those studies have considered framing types such as risky choice (Jamal, Johnson and Berryman 1995; Lipe 1993) or attribute framing (Emby and Finley 1997; O'Clock and Devine 1995; Emby 1994; Schneider,

Holstrom and Marden 1993). Even still, most of these studies find negative (loss) frames to be more persuasive than equivalent positive (gain) frames in motivating particular behaviors.

The behavior of interest to this study is professional skepticism. Of all the framing types, goal framing is most applicable for this context, as the focus of goal framing is to promote or encourage a particular behavior. Collectively, the results of several goal framing studies provide evidence that negative frames often serve as a stronger catalyst than positive frames for promoting some forms of behavior. Though some variation exists (O'Keefe and Jensen 2006), empirical findings suggest that individuals are more likely to engage in a behavior when they are presented with negative frames describing the consequences of not acting, than when presented with positive frames describing the benefits of engaging in the act. Levin et al. (1998) offer one explanation to justify why negative frames are often more persuasive than positive frames. The authors' reason that negative frames have a tendency to "intensify the original valence outcome, making a desirable outcome seem more desirable and an undesirable outcome seem more undesirable" (pg. 173). Also, research suggests that individuals may be highly susceptible to framing, even in instances where specific actions are taken to reduce framing effects, demonstrating a strong effect for the persistence of framed information (LeBoeuf and Shafir 2003).

Based on these findings, I assert that state professional skepticism may also be influenced by the frame provided to individuals, such that negative frames are more persuasive than positive frames for promoting state professional skepticism.

Hypothesis 5: Individuals provided with a negative frame of professional skepticism will exhibit greater levels of state professional skepticism than individuals provided with a positive frame.

In the following section, Chapter 3, I discuss the methodology that I used to test my hypotheses. Specifically, I provide a discussion of the participants, task, and analysis that I used for this study.

## CHAPTER 3

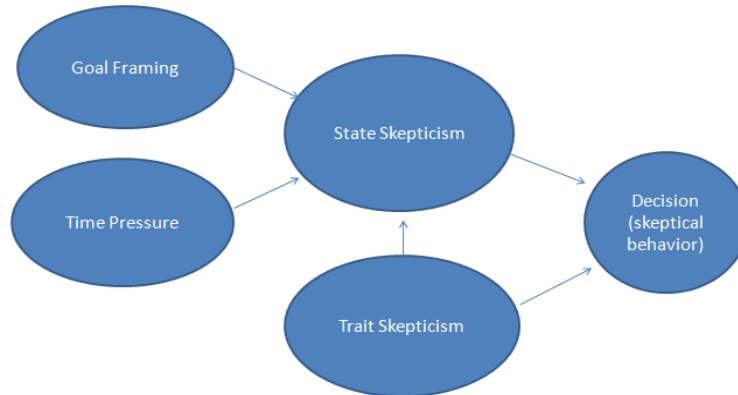
### METHODOLOGY

This chapter presents a detailed discussion of the research methodology used to test each of the hypotheses in my dissertation. I assert that state skepticism mediates the relationship between trait skepticism and skeptical behaviors and suggest goal framing and time pressure as influences over state skepticism. In the sections below, I describe my research design, the development of the experimental instrument, and the experimental steps. Additionally, I discuss how I measured and tested each hypothesis, and provide results from preliminary pilot testing of the instrument.

#### Research Design

I utilized a 2 X 2 between subjects experimental design to test the effects of time pressure and goal framing on state professional skepticism (See the research framework in Figure 1). Time pressure was manipulated as either high or moderate, while goal framing was manipulated by providing participants with either a positive or negative frame. Additionally, I captured measures of trait skepticism and state skepticism to assess their influence on skeptical behaviors.

**FIGURE 1**  
**Research Framework**



### Research Participants

The participants in this study were junior and senior-level accounting students enrolled in an undergraduate auditing course. I conducted the experiment during a regular class meeting and scheduled the timing of data collection so that instructors had previously discussed the basic concepts related to professional skepticism in the class. Recall that one of the primary objectives of this research is to distinguish between trait and state professional skepticism to assess their influence on skeptical behavior. Two of the skeptical behaviors identified in prior literature include requests for additional evidence and detection of contradictions (Hurtt, 2010; Hurtt et al. 2008; Quadackers 2007; McMillan and White 1993; Moeckel and Plumlee 1989). By the start of the experiment, it was important that students be familiar with the general processes of evidence evaluation used by practicing auditors. Introductory auditing courses expose students to analytical procedures, types of audit evidence, and various steps that auditors take to consider the reasonableness of client information. Thus, auditing students that have received classroom



instruction regarding professional judgment and professional skepticism meet the requisite criteria for participation in this research.

Although use of student subjects as surrogates for professional auditors potentially compromises the external validity of my research, prior literature asserts that students may be appropriate surrogates for novice auditors if the research focuses on decision making rather than attitudes or attitudinal changes (Glover et al. 1997; Murphy 1990; Ashton and Kramer 1980). In this study, I examine students' actual decisions regarding evidence collection and the acceptability of managerial estimates, satisfying Ahston and Kramer's (1980) criterion for use of student subjects.

Indeed, making judgments about evidence collection are typical tasks performed by staff auditors during routine audit engagements. Furthermore, Sutton and Byington (1993) suggest that novice or staff auditors are the target users of many auditing decision aids. Also, Kennedy (1995) found no significant difference between graduate students and auditors when studying judgments related to going concern tasks. Specifically, she suggests that "while the going-concern task may be unfamiliar to student subjects, the task is not unreasonable given their interests and education." In summary, use of student participants was appropriate given the goals of my research study and the tasks that subjects performed.

The experiment was conducted in two phases, which are outlined in Figure 2. First, participants completed the Hurtt (2010) trait skepticism scale to provide a measure of trait skepticism. The scale contained 30 questions and took approximately 5 minutes to complete. Completion of the trait scale took place one week prior to the actual experiment.

During Phase 2, the primary experimental task consisted of student participants performing routine audit procedures to evaluate an accounting estimate supplied by the client's

management. The experiment began with a brief lecture covering accounts receivable and the related accounts: Allowance for doubtful accounts and bad debt expense. The purpose of this lecture was to re-familiarize students with these concepts that had been previously taught in introductory accounting courses. Basic knowledge of these concepts was necessary for students to complete the experimental task.

In Step 2, packets were distributed to each participant. Each packet contained the following items: 1) Instructions for the case, 2) Case materials including company background, partial financial statements and information regarding the bad debt expense issue, 3) A survey questionnaire, including final evaluations of the estimate, the state skepticism scale, and demographic information, 4) Three evidence envelopes, 5) A calculator, and 6) 10 tickets for the cash drawing.

## Development of Experimental Instrument

### *Overview of Experimental Procedures*

#### **FIGURE 2**

##### **Summary of Experimental Procedures**

###### **Phase 1:**

**Step 1:** Participants complete the Hurtt (2010) scale to provide a measure of trait skepticism.

###### **Phase 2:**

**Step 1:** Participants are provided with a brief lecture covering the concepts of accounts receivable, allowance for doubtful accounts, and bad debt expense.

**Step 2:** The experiment begins with distribution of case materials to each participant. Materials include: company background, partial financial statements, information relevant for bad debt expense estimate, three evidence envelopes, a calculator, and 10 tickets for the cash drawing.

**Step 3:** Participants provide an initial evaluation of the reasonableness of management's current year estimate of bad debt expense.

**Step 4:** Participants have the opportunity to purchase additional audit evidence, with each

evidence item costing a specified number of tickets.

**Step 5:** Participants make a final decision regarding the reasonableness of management's estimate.

**Step 6:** Participants complete the state skepticism scale and answer demographic questions.

**Step 7:** All materials are collected. During the collection of materials, only those participants with the correct answer to the case will have their remaining tickets entered into the cash drawings.

**Step 8:** The cash drawing takes place and prizes are distributed.

Participants were provided with an overview of the experiment, during which time I read through the instructions and described the procedures for completing the case. During this time, participants had the opportunity to ask clarifying questions. After reading the case materials, participants made an initial decision regarding the reasonableness of management's current estimate of bad debt expense. Following this initial assessment, in Step 4, participants decided whether or not to "purchase" additional evidence items (using the tickets that were distributed in the packet). Each piece of evidence provided information that was useful in evaluating the reasonableness of management's estimate (see Appendix C for the evidence items). This portion of the experiment was performed to simulate the cost of extra time to investigate extra evidence. During Step 5, a final decision was made regarding management's estimate of bad debt expense. It was this final answer that determined each participant's eligibility for the cash drawing. In Step 6, students completed the state skepticism scale and answered various demographic questions. All materials were then collected and the cash drawing took place. The participants that had the correct answer to the case were invited to place their unused tickets into a jar, and tickets were drawn from the jar for the cash drawing.

To simulate the conflicting pressures of effectiveness and efficiency, the following procedures were implemented: participants paid for additional evidence with tickets; only participants who made the correct judgment were invited to place any of their remaining tickets

into the jar for the drawing; and participants could enter only the tickets not used to purchase additional evidence for evidence evaluation. Those students who arrived at the correct judgment, but used their tickets to achieve it, had fewer tickets to enter into the drawing than those students who arrived at the correct judgment without using any of their tickets for additional evidence collection.

### Manipulations

To satisfy the goals of my study, I manipulated two key variables: time pressure and goal framing. Time pressure was manipulated in two ways. First, similar to prior accounting studies, I manipulated time pressure within the case materials by varying the language used in the instructions (Bamber, Bamber and Bylinski 1988; Coram et al. 2004). For instance, in the high time pressure treatment group, the instructions stated that the 15 minute time frame was “extremely limited” and that only 45% of students had been able to complete this type of case in the past. Within the moderate time pressure treatment group, the time allotted was described as “extremely reasonable,” citing that 95% of students had been able to complete this type of case in the past.

Second, I divided participants into two separate rooms to further reinforce the time pressure manipulation. In the high condition, time pressure was enforced both verbally (by announcing the remaining time at 5 minute intervals) and visually (by providing a projected countdown of the time remaining for the task). In the moderate time pressure condition, participants were informed of the time that they would have to complete the task, but received no

visual or verbal cues related to the time frame. Participants completed the first portion of the case within 15 minutes.

Goal framing was manipulated within the case materials by providing participants with either a positive frame (which emphasized the benefits of engaging in professionally skeptical behavior) or a negative frame (which emphasized the consequences of not behaving professionally skeptical), supplied by the engagement manager in the case. This discussion of professional skepticism was placed in the context of a brainstorming session, which was led by the engagement manager.

### Experimental Task

In this experiment, participants completed the task of evaluating the reasonableness of management's bad debt expense estimate. This particular task was chosen because the task represented a situation where auditors were forced to make a judgment involving some degree of uncertainty. Thus, the task allowed for a broad range of responses, for which professional skepticism could be measured. Practitioners also recognize the important judgments surrounding estimates related to bad debt expense. For instance, Mark Olsen (PCAOB chairman) stated during a national conference that the recent economic downturn would "necessitate that auditor's pay close attention to areas such as the collectability of accounts receivables" (2008). In accounting research, several studies have utilized managerial estimates to examine issues related to auditors' judgments and decisions (Kaplan and Reckers 1995; Klersey 1994) and evaluating accounting estimates has been described as one of the most challenging areas of audit evidence (Mautz and Sharif, 1961). Given the importance of auditor judgments surrounding

management's estimates, the task is deemed appropriate for the objectives of this research. This is also a task that a junior auditor would be asked to perform; therefore the task is deemed appropriate for the research participants.

To capture participants' judgments in a decision making context, a case scenario was employed. The case in this experiment was a modified version of the published instrument used by Kaplan and Reckers (1995). That particular study examined the influence of various environmental red flags on auditors' decisions regarding accounting estimates. Kaplan and Reckers considered four separate accounting estimates. In order to conduct a more in-depth examination of the degree of professional skepticism exercised during one accounting task, I used only the scenario dealing with management's estimate of bad debt expense. The scenario described a hypothetical company, Associated Industries, and illustrated a situation in which client management provided an initial estimate of bad debt expense and the auditor decided whether or not to accept management's estimate.

Several modifications were made to the Kaplan and Reckers case (see Appendix A for the case instrument). First, I included a second auditor in the case scenario who is described as assisting with the audit engagement. The second auditor is the person who alerts attention to management's estimate of bad debt expense and is the first to suggest that management should increase the amount of their estimate. Second, the original case manipulated variables including: management lifestyle, bonus compensation programs, and strength of internal audit department, with each manipulated at a level of either high or low risk. These manipulations were modified to create a neutral setting. Third, three pieces of contradictory information were embedded within the case materials for the purposes of assessing participants' ability to detect those contradictions. The contradictions represented conflicting information in the case materials. For

instance, in the first contradiction, the client's controller (Phil) states that Associated Industries' sales have steadily increased for the last two years. However, a careful review of the financial statements reveals a decline in sales for one of the last three years. In another contradiction, Associated Industries' CEO states that 4 of the 10 largest customers show signs of bankruptcy, while the controller states that 2 of the 10 largest customers show signs of bankruptcy. Last, the financial statements reveal that the number of day's sales ratio for 2009 is 39 days; however the controller provides a more favorable ratio of 29 days.

Recall that prior research suggests that one type of professionally skeptical behavior is the ability to detect errors or contradictions within sources of audit evidence (Hurt, Eining and Plumlee 2010; Hurt 2010). By seeding contradictions into the case materials and eliciting participants' identification of conflicting information, my experiment captures a direct measure of the number of correct contradictions that participants were able to detect. Additionally, the contradictions were designed to be equivalent, such that no contradiction was more difficult to identify than any other contradiction. I expected that the most professionally skeptical participants would be able to detect all three contradictions that were embedded in the case. Thus, the number of contradictions detected represents one of my dependent variables.

For the fourth alteration to the Kaplan and Reckers case, I created three pieces of additional evidence related to the audit task, and placed each of these items in a separately sealed envelope. These envelopes were included as part of the case materials. Prior research suggests that professional skepticism is associated with how (and whether) auditors evaluate audit evidence (Hurt, Eining and Plumlee 2010; Hurt 2010). As such, the number of additional pieces of evidence envelopes that participants elect to evaluate is a second measure of professionally skeptical behavior. Fifth, the original case was administered to senior and

manager-level auditors but the participants of this research are novice auditors. In order to adapt the case to a different subject group, minor modifications were made to the wording of the case scenario. For example, one minor adjustment changed the position title of the auditor assisting with the engagement from staff auditor to audit intern with no prior accounting experience. In this manner, the second auditor working on the engagement would not be described as someone having more experience than the student participants. Last, in an effort to make the information about client management and their background easily accessible, a “Cast of Characters” section was constructed and placed near the beginning of the case materials. This section included profiled pictures for the CEO and controller and allowed participants to quickly reference background information and certain statements made by client management.

Following the experimental task, participants were asked to complete a final set of questions in the post-experimental questionnaire. Included in this section were the following: Questions designed to assess the effectiveness of the manipulations used, a state skepticism scale, and various demographic questions. After completing this final section, students submitted all case materials and the drawing took place.

### Measuring and Testing Hypotheses

In this section, I provide a detailed description of the methods used to test each of my proposed hypotheses. I also discuss the measurement of each of the dependent and independent variables used in my research framework. Recall that the primary dependent variable relates to professionally skeptical behavior and is operationalized as: the number of evidence envelopes opened and the number of contradictions detected. Additionally, I assert that state professional



skepticism is influenced by goal framing and time pressure, and mediates the relationship between trait professional skepticism and skeptical behaviors. Thus, state skepticism is the second dependent variable of study.

### *Variable Measurement*

Hypothesis 1 suggests that individuals with higher levels of trait professional skepticism will exhibit more skeptical behavior than those individuals with lower levels of trait professional skepticism. I used the Hurtt (2010) Professional Skepticism Scale as a measure of the independent variable, trait skepticism.

The Hurtt scale was extensively pilot tested using student subjects to arrive at the final questions used on the 30-item scale (see the scale in Appendix B). Reliability of this instrument was examined and Hurtt reports a Cronbach's alpha score of .95 from combined testing over an eight week time frame. The Hurtt scale was also pilot tested on 200 professional auditor subjects. Cronbach's alpha for that group was equal to .86, indicating strong reliability of the measuring instrument.<sup>15</sup>

The dependent variable examined in Hypothesis 1 is skeptical behavior (refer to Table 1 which maps each hypothesis to the experimental instrument). The first four questions of the experimental instrument establish a baseline for participants' evaluation of management's estimate. These questions were designed to elicit participants' intermediate judgments regarding the reasonableness of management's current estimate and perceptions about managements' intentions, prior to participants' having the opportunity to seek additional evidence. While these baseline measurements were not hypothesized they are included as part of supplemental analysis to assess their influence on skeptical behaviors.

---

<sup>15</sup> Nunnally (1978) suggests that Cronbach's alpha scores greater than .70 are evidence of strong reliability.

TABLE 1					
Mapping of Experimental Instrument to Hypotheses					
No.	Construct	Measured or Manipulated?	Alternative purpose	Question number (s) or other placement	Related hypothesis(es)
1	Skeptical behavior	Measured		Q5-Q7, Q10, Q11	H1, H2, H3
2	State professional skepticism	Measured		Q18-Q29	H2, H3, H4, H5, H6
3	Trait skepticism	Measured		Hurttt (2010) scale	H1
4	Goal framing	Manipulated between subjects		Brainstorming discussion	H5, H6
5	Time pressure	Manipulated between subjects		Instructions	H4, H6
6			Manipulation check	Q12-Q16, Q30-32	N/A
7			Control variable (demographics)	Q17, Q33-Q39	N/A
8			Cash drawing eligibility	Q9	N/A
9			Supplemental analysis	Q1-Q4, Q8	N/A

The construct, skeptical behavior, was measured using responses to two questions designed to capture characteristics of participants' evidence evaluation. More skepticism has been associated with increased evidence search and with an increased amount of contradiction detection. As a starting point to measuring the amount of evidence evaluated, Questions 5 through 7 on the experimental instrument provided the instructions which stepped participants through the process of collecting additional evidence. Participants could have chosen to open none of the evidence envelopes or selected up to three evidence envelopes to use for additional evidence. Question 10 asked for the total number of evidence envelopes that were opened during the experiment and was used as the first dependent measure of skeptical behavior. The number of envelopes opened ranged from a minimum of zero (if students requested no additional evidence) to a maximum of three (if all pieces of evidence were requested). To further increase the reliability of the instrument, I verified that the number provided by participants was consistent with the number of envelopes that had broken seals.

The second skeptical behavior examined was the total number of contradictions that students were able to detect from the case study. Question 11, on the experimental instrument, asked participants to indicate whether each contradiction listed was present in the case. The instrument listed seven potential contradictions, however only three of the items were correct.

Thus, I counted the number of correctly identified contradictions and subtracted the number of incorrectly selected contradictions to measure this variable. Each measure of skeptical behavior is analyzed separately in hypothesis testing.

### *State Professional Skepticism*

State professional skepticism is both a dependent variable (H3-H5) and an independent variable (H2, H6) in this study. Therefore, a scale designed to capture participants' state professional skepticism was developed in the following way.

#### *Development of a State Professional Skepticism Scale*

The Hurtt (2010) professional skepticism scale served as the basis for my development of a state professional skepticism scale and prior research offers support for this practice. For instance, Kluemper, Little and DeGroot (2009) investigated the effects of trait and state optimism on organizational outcomes. In order to capture measures of state optimism, the authors modified an existing (trait) optimism scale to obtain current state optimism levels. While the trait optimism scale asked participants to record their general agreement with statements “over the past year,” the state optimism scale asked respondents to indicate agreement with statements “over the past week.” The differences in phrasing are supported by findings in prior research, which assert that traits relate to general, less-specific characteristics, while states are more malleable and context-specific (Peterson 2000). Accordingly, the trait scale was also modified by including the phrase “currently” at the start of each question. For instance, respondents were asked to what extent they agreed with the statement “Currently, I am optimistic about my future.”

As discussed previously, the Hurtt scale captures a measure of trait professional skepticism, which research has described as a relatively general characteristic that individuals'

possess. However, leveraging on findings in prior research (Nelson 2009; Hurtt et al. 2008), evidence suggests that certain environmental conditions may also influence the degree of professional skepticism that is exercised from one audit engagement to another. In other words, while auditors' general levels of professional skepticism likely influence behavior across all engagements; there is also an aspect of professional skepticism that varies dependent upon environmental circumstances.

While prior literature acknowledges both the trait and state elements of professional skepticism, the relationship between the two constructs has received little attention. Hurtt (2010) proposed a framework illustrating how both trait skepticism and state skepticism influence an individual's skeptical mindset. Building on this framework, I explore the possibility that individuals' trait skepticism influences their state skepticism level, such that an additive effect exists between the two constructs. As such, an individual with high trait skepticism and high state skepticism would exhibit the most skeptical behavior. Thus, a scale designed to capture a specific measure of state professional skepticism should be useful to academic researchers in examining some of the many factors that likely influence auditor professional skepticism.

The state skepticism scale was developed by using the Hurtt (2010)<sup>16</sup> scale as a starting point and modifying questions to elicit state, rather than, trait measurements, following the Kluemper et al. (2009) methodology. As the Hurtt scale consists of six distinct dimensions of professional skepticism, I first considered which dimensions would be most influenced by environmental factors, and thus most applicable for the state-like concept. To examine the degree of variability in each of the six categories, the Hurtt (2010) professional skepticism scale was administered to undergraduate auditing students on two separate occasions, within a three-month time frame. The scale was first administered during week one of class meetings, prior to any

---

<sup>16</sup> See Appendix B for the Hurtt (2010) Professional Skepticism Scale.

instruction on concepts of professional skepticism or professional judgment. The second administration of the scale occurred after students had received instruction on topics of professional skepticism and the applicable auditing standards that reference the term.

Results from the pre- and post-professional skepticism scores indicated that students' scores did in fact increase from the beginning to the end of the course. Also, the most dramatic increases generally occurred in the dimensions of the scale that relate to three characteristics of evidence evaluation: A questioning mind, suspension of judgment, and search for knowledge. This trend offered support for studying professional skepticism as a temporary state and for selection of the final categories used in the state skepticism scale.

The final three categories used in the state skepticism scale include: A questioning mind, suspension of judgment, and a search for knowledge. The omitted dimensions are: Interpersonal understanding, self-esteem, and autonomy. Based on results of pilot testing, I considered questions from these categories to be most related to individuals' trait-like characteristics and thus, their inclusion in a state skepticism scale was deemed inappropriate.

Table 2 provides a detailed description of the changes made to each scale-item. Each question from the Hurtt skepticism scale was either modified or eliminated to form the final 12-item scale. A panel of three faculty members, two from accounting and one from information technology, assisted in the selection and modification of each question for the scale. Additionally, two new questions were added to develop the state skepticism scale. These questions were not derived from the Hurtt skepticism scale.

Following the process used by Kluemper et al. (2009), the Hurtt skepticism scale, which captures *general* agreement with statements about professional skepticism, was modified to obtain participants' *current* state of professional skepticism while working on a specific case.

Note that the two questions added in the creation of the state skepticism scale are contained in the section titled “search for knowledge.” Hurtt suggests that this particular characteristic represents a “sense of general curiosity or interest” (2010, 154). I assert that state professional skepticism does not necessarily entail a genuine interest in searching for knowledge, but rather a calculated decision to search for knowledge based on certain motivating (environmental) factors. In other words, when an individual experiences state skepticism, they may not enjoy the search, but instead make an informed decision to search for evidence because of the environmental incentives that may result from doing so. Thus, the two added questions in the search for knowledge category (Questions 3 and 4) reflect the propensity for an individual to search for knowledge, without considering any of the intrinsic benefits (such as enjoyment or excitement) that they might experience by searching. In addition, two original questions in the search for knowledge category were modified in attempts to elicit participants’ true motivation for seeking additional evidence. Specifically, these questions ask participants if they tended to search for evidence in order to help them to arrive at the correct answer to the case. In this experiment, having the correct answer allowed participants’ to participate in the cash drawing.

**TABLE 2**  
**Construction of the State Professional Skepticism Scale**

Hurttt Professional Skepticism Scale (2010)	<i>Changes Made</i>	Proposed State Professional Skepticism Scale
<u>Questioning mind</u>		<u>Questioning mind</u>
1. My friends tell me that I often question things that I see or hear.	<i>Modified</i>	1. Overall, I tended to question the statements that I read from Phil, the controller
2. I frequently question things that I see or hear.	<i>Modified</i>	2. While working on this case, I frequently questioned the things that I saw or read
3. I often reject statements unless I have proof that they are true.	<i>Modified</i>	3. While working on this case, I had a tendency to reject statements unless I had proof that they were true.
<u>Suspension of judgment</u>		<u>Suspension of judgment</u>
1. I take my time when making decisions.	<i>Modified</i>	1. While working on this case, I took my time when making decisions.
2. I don't like to decide until I've looked at all of the readily available information.	<i>Modified</i>	2. During this experiment, I did not like deciding until I had a chance to look at all of the available information.
3. I dislike having to make decisions quickly.	<i>Modified</i>	3. I did not like having to make decisions quickly while working on this case.
4. I like to ensure that I've considered most available information before making a decision.	<i>Modified</i>	4. Currently, I like to ensure that I've considered most available information before making a decision.
5. I wait to decide on issues until I can get more information.	<i>Modified</i>	5. While completing this case, I waited to make decisions until I could get more information.
<u>Search for knowledge</u>		<u>Search for knowledge</u>
1. I think that learning is exciting.	<i>Eliminated</i>	
2. I relish learning.	<i>Modified</i>	1. I enjoyed learning about the company in this case.
3. Discovering new information is fun.	<i>Modified</i>	2. Discovering new information in this case was fun.
4. I like searching for knowledge.	<i>Eliminated</i>	
5. The prospect of learning excites me.	<i>Eliminated</i>	
	<i>Added</i>	3. I actively sought out all of the information that I could while completing this case.
	<i>Added</i>	4. I used all resources available to me to get all of the information that I could.

The state skepticism construct was measured using total scores obtained from the state skepticism scale. The total score is a summary measure of 12 questions (Q18-Q29), with responses ranging from 1 (I don't agree at all) to 7 (fully agree), and a maximum possible score of 84. The 12 questions were designed to capture the degree of skepticism that was experienced while working on the hypothetical audit case. The three categories contained in the scale (questioning mind, suspension of judgment, and a search for knowledge) represent aspects of evidence evaluation. For instance, in the questioning mind category, the first question asked for the extent of agreement with the statement "Overall, I tended to question the statements that I read from Phil, the controller." By using specific information from the case materials, I was able

to assess the level of professional skepticism exerted during one particular task. The state skepticism scale is presented in the experimental instrument in Appendix A.

### *Time Pressure*

The fourth hypothesis asserts that time pressure is inversely related to state professional skepticism, such that higher time pressure is associated with lower state skepticism. The independent variable, time pressure, was manipulated between participants at two levels (moderate or high). At the start of the experiment, participants were randomly assigned to either the moderate or high time pressure condition. Page 1 of the experimental instrument contains instructions with specific information regarding the time frame for the task (see Appendix A). Recall that time pressure was manipulated in two ways. First, the case instructions described time as either “extremely limited” (high time pressure) or “quite reasonable” (moderate time pressure), also informing students of the typical percentages of students that were able to complete the case in the past, using percentages of 45% or 99%, respectively.

Second, time pressure was manipulated by dividing participants into two separate classrooms. Though both groups were given the same number of minutes to complete the task (15 minutes), the high time pressure treatment group was provided with verbal and visual reminders of the time remaining in minutes, while the moderate time pressure treatment group was informed only once of the number of minutes allowed for completing the task.

### *Goal Framing*

Hypothesis 5 posits that negative goal framing will be associated with higher state professional skepticism than positive goal framing. Goal framing was manipulated via the case materials, in a section describing an audit firm brainstorming session. Participants were randomly assigned to one of the two goal framing conditions, and provided with either a positive



frame (which emphasized the benefits of engaging in professionally skeptical behavior) or a negative frame (which emphasized the consequences of *not* behaving professionally skeptical). Specifically, the positive frame listed four benefits of professional skepticism, while the negative frame listed four consequences that might occur from a lack of professional skepticism.

### *Testing of Hypotheses*

Recall that Hypothesis 1 posits a positive relationship between trait professional skepticism and skeptical behavior. Skeptical behavior is operationalized as both the number of evidence envelopes opened and the number of contradictions detected. To test Hypothesis 1, I first performed a median-split on trait skepticism summary scores, which yielded two groups (high and low trait skepticism). I then used MANOVA to compare measures of each skeptical behavior among high and low trait skepticism groups. I expected that high trait skepticism individuals would exhibit greater skeptical behavior by opening more evidence envelopes and detecting more true contradictions than individuals in the low trait skepticism group.

Having established a measure of state professional skepticism, Hypothesis 2 was tested using MANOVA to examine the relationship between high and low state skepticism groups and each skeptical behavior. In analyzing measures of state skepticism, higher total scores represented greater state skepticism, while lower scores were indicative of lower state skepticism.

Hypothesis 3 posits that state professional skepticism mediates the relationship between trait professional skepticism and skeptical behaviors. Prior literature suggests that not only do states influence behavior, but they act as mediators in the relationship between traits and behavior (George 1992). As a result, it is plausible that trait professional skepticism influences

state professional skepticism and that state professional skepticism is the immediate precursor to skeptical behavior.

The relationship between trait and state professional skepticism has not received adequate attention in prior literature. In examining the trait versus state dimensions of professional skepticism, I suggest that while trait skepticism influences skeptical behavior, it may do so via the temporary state of professional skepticism. To test this hypothesis, I first tested for a significant relationship between the independent variable (trait skepticism) and the presumed mediator (state skepticism) following Baron and Kenny's (1986) criteria for mediation. The second step of mediation analysis tests for a significant relationship between the presumed mediator (state skepticism) and the dependent variable (skeptical behavior). Third, I tested whether the independent variable (trait skepticism) was significantly associated with the outcome variable (skeptical behavior). Fourth, I examined the relationship between trait skepticism and skeptical behavior, while controlling for the two paths described in steps one and two. If the relationship between trait skepticism and skeptical behavior was significantly reduced, then the mediating effect of state skepticism would be revealed, finding support for Hypothesis 3.

Hypothesis 4 suggested that individuals under high time pressure will exhibit lower levels of state professional skepticism than individuals under moderate time pressure. In my experiment, time pressure was manipulated at two levels: moderate or high. As time pressure increased from moderate to high levels, I expected that the extent of evidence evaluation would be influenced. Specifically, when faced with higher levels of time pressure, individuals may have foregone additional evidence collection or felt pressure to reach conclusions in an expedited manner (i.e. avoid suspending their judgments).

Additionally, under high time pressure, individuals may have perceived less time available to question or challenge the quality of the information they were given. Conversely, when individuals did not feel pressured by time constraints, they may have taken more time to form final judgments or question information, and spent more time collecting what they believed to be an appropriate amount of audit evidence. Thus, I expected that higher time pressure would be associated with lower state professional skepticism. I tested this hypothesis by examining differences in total state skepticism scores between time pressure treatment groups.

Hypothesis 5 states that individuals provided with a negative goal frame of professional skepticism will exhibit more state professional skepticism than individuals provided with a positive goal frame.

Goal framing is often used in an effort to promote a certain cause or specific behavior. In this case, the behavior that I promote is professional skepticism. Yet, I assert that professionally skeptical behavior occurs once individuals enter into the state of professional skepticism. Goal framing enters into this equation by offering one technique for promoting the behavior. Specifically, professional skepticism can be motivated by informing participants of the positive consequences that result from engaging in the behavior (positive goal framing) or by emphasizing the negative consequences that can result from not engaging in the behavior (negative goal frame). Prior research documents that negative goal frames often serve as a stronger catalyst of certain behaviors than positive goal frames. Thus, I predict that individuals in the negative framing condition will yield higher state professional skepticism scores. To test this hypothesis, I examined differences in total state skepticism scores between goal framing treatment groups.

## Validation and Pilot Testing

### *Pilot Testing and Preliminary Data Analysis*

The experimental instrument was pilot tested on two separate occasions, using undergraduate accounting students enrolled in introductory auditing courses. Each of the pilot tests were conducted in students regular class meeting locations. Also, the pilots took place after students' had received instruction on the concepts of professional skepticism. The primary goal of each pilot test was to ensure that the manipulations were operating as intended and to obtain preliminary results of some of the hypothesized relationships. Based on results of pilot test 1, several modifications were made to the instrument, including different manipulations of time pressure and goal framing. Specifically, results from the first pilot test indicated that participants' perceptions of time pressure and goal framing were inconsistent with their experimental conditions. For instance, results from ANOVA indicated that students in the high time pressure condition did not perceive significantly greater time pressure than students in the moderate time pressure condition. Thus, neither the time pressure manipulation nor the goal framing manipulations were operating as intended.

Significant changes were made to pilot test 2 in order to improve the time pressure manipulation. For instance, rather than manipulating time pressure only within the case instructions, participants were separated into two different classrooms to further reinforce the manipulations. Changes were also made to the goal framing manipulation following pilot test 1. Specifically, for the second pilot test, the negative framing condition was strengthened by providing specific examples of harsh penalties imposed on actual audit firms and emphasizing the negative consequences of lack of professional skepticism. The preliminary results described

in the following sections are derived from findings of the second pilot test, which yielded usable responses from 59 participants.

#### *Pretesting the State Professional Skepticism Scale*

The state skepticism scale was included as part of the case materials for the second pilot and students completed the 12-item scale following the experimental task. Students' total state skepticism scores ranged from 36 to 84, with 84 being the maximum possible score. The mean total score for the group was 62. Cronbach's alpha was calculated to test the reliability of the measuring instrument. This test was performed to ensure that the scale questions were measuring the same general construct (state professional skepticism). Cronbach's alpha for the 12-item scale was .864, indicating a high degree of reliability.

#### *Manipulation Checks*

Six questions were used to test the time pressure manipulation, with the first question posed immediately after the manipulation, and the other five questions asked following completion of the case. Capturing perceptions of time pressure before and after the experiment was done so that changes in perceptions of time pressure could be measured. To explain, it could be that some students initially felt time pressure, but as they completed the task, perceptions of time pressure were reduced. On the other hand, some students may have felt little time pressure initially, but perceived an increase in time pressure towards the end of the task.

For the pilot test, Univariate Analysis of Variance (ANOVA) was used to test the relationship between time pressure condition and participants' perceptions of time pressure. All five post-experimental questions designed to check the time pressure manipulation were combined (summed) to form a summary measure of time pressure perception. Factor analysis was performed using the principal components method with varimax rotation. From the

analysis, one initial factor was extracted. The results indicated that all five questions loaded onto one construct, supporting the grouping of these items into a single variable<sup>17</sup>. The specific questions used in the summary measure were Questions 12, 13, and 30-32 (See Appendix A). ANOVA tests indicated a significant relationship between manipulated time pressure and the summary manipulation check variable, with a p-value = .015.

Three questions were used to assess the effectiveness of the goal framing manipulation. These questions attempted to capture the extent to which professional skepticism was described as either more positive or negative. As predicted, participants in the negative goal frame group reported higher mean agreement (mean = 6.44) with the following statement “I was informed about the negative consequences of NOT behaving professionally skeptical?,” than participants in the positive goal frame group (mean = 4.22; p-value = .000). Accordingly, participants in the positive frame reported higher mean agreement (mean = 6.30) with the following statement “I was informed about the positive consequences of behaving professionally skeptical?” than participants in the negative frame group (mean = 3.94; p-value = .000). Finally, when asked, “What is your opinion about how professional skepticism was described to you?” on a scale ranging from 1 (extremely negative) to 7 (extremely positive), participants in the positive goal framing condition reported significantly higher mean scores than participants in the negative goal framing condition, with means of 6.07 and 3.84 respectively,  $F=24.705$ ;  $p= .000$ .

### Pilot Data Analysis – Hypothesis 2

Hypothesis 2 predicts a positive relationship between state professional skepticism and skeptical behaviors. The two skeptical behaviors considered were the number of evidence

---

<sup>17</sup> Four of the five questions yielded factor loadings above .70, while one question produced a loading of .68.

envelopes opened and the number of contradictions detected. To test this hypothesis, I performed an ANOVA statistical test comparing total scores from the state professional skepticism scale with each dependent variable. A significant relationship was found between total state skepticism scores and the number of evidence envelopes opened. The p-value for this test was .006, indicating a significant difference between the two groups. However, no significant relationship was found between total state skepticism scores and the number of contradictions participants said they detected. Thus Hypothesis 2 is partially supported.

#### Pilot Data Analysis – Hypothesis 4

Hypothesis 4 suggests that individuals under high time pressure will exhibit lower levels of state professional skepticism than individuals under moderate time pressure. Again, an ANOVA statistical test was performed to test this hypothesis, using total state skepticism scores as the dependent variable. No significant relationship was found when comparing differences in total state skepticism scores between participants in the high versus moderate time pressure condition. However, there were some significant relationships found between subject groups for two of the 12 questions from the state skepticism scale. For instance, within the category “suspension of judgment,” Question 21 reads “While working on this case, I took my time when making decisions.” Students’ responses were captured on a scale from 1 (I don’t agree at all) to 7 (I fully agree). Results revealed a significant relationship between time pressure and Question 21 ( $F = 4.71, p = .034$ ). Also, within the category “a search for knowledge,” time pressure was significantly related to Question 26, “I enjoyed learning about the company in this case.”

## Pilot Data Analysis – Hypothesis 5

Hypothesis 5 states that individuals provided with a negative frame of professional skepticism will exhibit greater levels of state professional skepticism than individuals provided with a positive frame. I tested this hypothesis by performing ANOVA statistical tests, using total state skepticism scores as the dependent variable. The negative goal frame treatment group had mean state skepticism scores of 63.61, while those in the positive goal frame treatment group reported a mean state skepticism score of 61, out of a possible score of 84. Consistent with my expectations, the negative goal frame treatment group did report a higher mean state skepticism score. However, although the results are in the expected direction, they are not statistically significant. Thus, Hypothesis 5 is not supported.

## Modifications of Experimental Instrument Following Pilot Test 2

Overall, results of the second pilot test allowed me to identify certain aspects of the experiment that should be modified. Although the mediation hypothesis was not tested<sup>18</sup>, results of several other hypotheses directed attention to areas needing improvement. First, based on participants' performance in pilot test 2, the time limit to complete part of the instrument was reduced from 25 to 15 minutes. During the second pilot, all participants completed part one within an 18 minute time frame, indicating that the time provided to them was too generous. Thus, a 15 minute time frame is considered optimal for the final experiment. Second, based on results from pilot test 2, I also made revisions to the framing discussion that was presented in the case. Recall that the engagement manager of the audit firm conducts a brainstorming session in

---

<sup>18</sup> The mediation hypothesis was not tested during pilot studies because participants' had not completed the Hurtt (2010) trait professional skepticism scale.



order to discuss the positive (negative) consequences of (lack of) professional skepticism. In order to place more emphasis on the negative frame, I added one additional consequence related to the former accounting firm, Arthur Andersen. This frame offers a specific consequence with harsh penalties for individual auditors as well as the audit firm. Also, to further improve the goal framing manipulation, I modified the placement of goal framing information. In pilot test 2, students were asked to “Describe two benefits (consequences) of (lack of) professional skepticism” and the answers were recorded prior to reading the majority of case information (i.e. company background, audit issue, etc.). I moved the listing of benefits (consequences) the end of the case materials, such that students must recall this information immediately prior to making decisions about the reasonableness of managements estimate in the final instrument. I expected that forcing students to consider their respective goal frames will influence their decisions and levels of state professional skepticism.

A third modification following pilot test 2 involves the dependent variable, number of contradictions detected. Recall that results of pilot 2 revealed a significant relationship between state skepticism and the skeptical behavior, number of evidence envelopes opened, such that those with higher skepticism scores opened a significantly greater mean number of evidence envelopes than those with lower skepticism scores. However, no significant relationship was found between state skepticism scores and the skeptical behavior, number of contradictions detected. I modified the measurement of the contradiction variable by removing students’ open-ended recall of contradictions and instead providing them with a list of contradictions. The list includes three true contradictions and four untrue contradictions; thus students must consider which of the seven contradictions are correct. This modification ensures that I am capturing a more accurate account of the contradictions correctly identified by participants, rather than

relying on self-reported contradictions, which may not have been entirely accurate.

Additionally, to further improve the responses to this question, I modified the case to alert participants at the start of the case that they may be asked to recall contradictions that may be present in the case materials.

Last, changes were made to the questions designed to check the goal framing manipulation. The questions used in pilot test 2 merely asked students for their extent of agreement with the statement “I was informed about the negative consequences of not behaving professionally skeptical.” Participants’ responses to this question did not appear to truly capture the intent of the framing manipulation, as agreement with the statement merely reflected participants’ correct recollection of the frame they were given. More importantly, I am interested that students can internalize the goal framing manipulation and consider either positive or negative consequences associated with professional skepticism when they think about the term. Thus the manipulation check questions were modified as such; “When I think about professional skepticism, I think more about the consequences of **not** behaving professionally skeptical than I think about the benefits of behaving professionally skeptical” and “After reading this case, I am aware of several negative consequences that can result from **not** behaving professionally skeptical.”

The next chapter presents the results of my dissertation experiment.

## CHAPTER 4

### RESULTS

This chapter presents the results of my dissertation experiment, which was administered to 65 auditing students. In this chapter, I describe participant demographic information, the process used to validate my data, and results from hypotheses testing and supplemental analysis.

#### Participant Demographics

The participants in this experiment were senior accounting students enrolled in two sections of the first auditing course. Components of the experiment were administered during two regularly scheduled class meetings. The experiment was conducted following participants' classroom instruction on topics related to auditors' professional skepticism and professional judgment. Additionally, the auditing course provided students the opportunity to complete case studies on various issues, including the specific issue used in this experimental task (management estimates). Given students' familiarity with professional skepticism and their previous completion of similar auditing cases, the participants possessed the requisite knowledge required to complete the experimental task (Bean and Aquila 2003; Maletta, Anderson, and Angelini 1999; Glover et al. 1997).

During Phase 1 of the experiment, participants completed the Hurtt (2010) Professional Skepticism Scale to provide a measure of trait skepticism. Approximately two weeks after Phase 1, Phase 2 consisted of the remaining experimental steps, including completion of the audit case, the state professional skepticism scale, and demographic questions. Thus, it was necessary to match each individual's data from both phases, without obtaining any personally identifiable

information. In order to maintain participants' anonymity and to ensure that the answers provided by participants remained confidential participants were asked to create nicknames or "tag names" and to record these names (or numbers) on all of their experimental materials.

Though the initial subject pool from both auditing classes totaled 75 possible participants, six participants completed only phase 1 and did not attend phase 2, reducing the subject pool to 69. Additionally, four experimental instruments were excluded due to participants' failure to properly record matching nicknames on both sets of experimental materials. An attempt was made to follow-up on the unmatched instruments; however, these attempts were unsuccessful. Elimination of these observations yielded a usable sample of 65.

Table 3 presents descriptive statistics for experimental participants. Of the 65 participants, 27 (41.5%) were males. The mean age of the sample was 24.89 years, and participants ages ranged from 20 to 52. On average, participants had approximately 6.5 years of work experience and approximately 1.5 years of accounting work experience.

	<u>Number</u> <u>(%)</u>			
<u>Gender:</u>				
Females	38			
	(58.5%)			
Males	27			
	(41.5%)			
	<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>	<u>Standard</u> <u>Deviation</u>
Age	20	52	24.89	6.05
Years of work experience	0	35	6.50	5.90
Years of accounting work experience	0	30	1.53	4.72

## Variable Construction and Validation

### *Manipulated Independent Variables*

I manipulated two independent variables: time pressure (moderate/high) and goal framing (positive/negative). Six questions were designed to capture participants' perceptions of time pressure, with the first questions posed immediately after the experimental instructions and the remaining questions posed following the experimental task. Three questions were designed to elicit perceptions about goal framing. In the following sections, I describe these 2 manipulated variables and discuss the success of each manipulation.

#### *Time Pressure*

The effectiveness of the time pressure manipulation was assessed by comparing the six time pressure manipulation check questions between participants in the moderate and high time pressure treatment groups using independent samples *t*-tests. The first question (prior to starting the case) asked “What is your perception regarding the amount of time that you will have to complete this case?” Responses to this question ranged from 1 (Not much time) to 7 (Plenty of time). As expected, participants in the high time pressure treatment group reported a significantly lower mean response to this question ( $M = 3.95$ ) than participants in the moderate time pressure treatment group ( $M = 4.57$ ;  $t = 1.789$ ;  $p = .039^{19}$ ), indicating that participants correctly perceived their respective time pressure conditions at the start of the experimental task.

Next, a summary measure of all six time pressure questions was calculated and results from comparing the summary measure between moderate and high time pressure treatment groups using independent samples *t*-test revealed that participants in the high time pressure condition reported lower mean agreement ( $M = 28.43$ ) with time sufficiency perceptions

---

<sup>19</sup> Throughout this paper, all *p*-values are presented as one-tailed values. This includes all hypothesized relationships, as well as those not specifically hypothesized.

questions than participants in the moderate time pressure condition ( $M = 29.036$ ), with lower agreement indicating higher perceptions of time pressure. However, these differences were not statistically significant ( $t = .676$ ;  $p = .250$ ). These findings are not entirely surprising as the 15 minute time frame was purposely instituted to create some level of time pressure and was considered an ambitious target for completing the case. Thus, it appears that following case completion, participants in both time pressure conditions recognized the difficulty of completing the case in the allotted time. While the summary measure of all time pressure perception questions was not significantly different between time pressure treatment groups, mean scores for three of the six questions were significantly (or marginally significantly) different between groups.

As no significant differences were observed between the time pressure variable and the summary measure of all six time pressure questions, I performed factor analysis on the six questions designed to assess time pressure perceptions. Based on the results of a principal components factor analysis with oblimin rotation, two components were extracted. The first three questions loaded highly on component 2, while the last three questions demonstrated high loadings on component one. The results are presented in Table 4. Additionally, Cronbach's alpha was calculated for each of the factors extracted. Cronbach's alpha statistics for the first three time pressure perception questions (0, 12, and 13), and the last three questions (30-32) were  $.57^{20}$  and  $.70$ , respectively.

I used the 2 extracted factors to test differences between time pressure treatment groups. The first three time pressure perception questions loading on factor 2 (0, 12, and 13) were summed to create the first manipulation check measure. The last three time pressure perception questions (30-32), which loaded highly on factor 1, were summed to create a second dependent

---

<sup>20</sup> This result is not sufficiently reliable based on Nunnally's (1978) criteria.

measure of time pressure perceptions. I performed two separate independent samples *t*-test using each of the two factors as the dependent variable to compare differences between time pressure treatment groups.

**TABLE 4**  
**Factor Analysis - Time Pressure Perceptions Between Treatment Groups**

	<u>Component</u>		<u>Cronbach's alpha</u>
	<u>1</u>	<u>2</u>	
1 Question 0		0.586	
2 Question 12		0.798	
3 Question 13		0.791	<b>0.57</b>
4 Question 30	0.643		
5 Question 31	0.873		
6 Question 32	0.842		<b>0.70</b>

*Extraction Method: Principal Component Analysis.*  
*Rotation Method: Oblimin with Kaiser Normalization.*

The results revealed a significant difference between time pressure treatment groups in summary scores from the first set of time pressure perception questions ( $t = 1.961$ ;  $p = .027$ ), but not for the second set of time pressure questions ( $t = -1.288$ ;  $p = .101$ ).

As an additional manipulation check, I tested for a relationship between time pressure and trait skepticism. Recall that Hypothesis 4 predicts that time pressure is significantly related to state skepticism. However, given that two separate rooms were used for the time pressure manipulation (one high pressure room/one moderate), it was important to ensure that participants were randomly assigned to those rooms. Results from ANOVA test revealed no significant relationship between time pressure and trait skepticism ( $F = .001$ ;  $p = .489$ ). Thus, it appears that participants were randomly assigned (without regard to their trait skepticism levels) to the moderate and high time pressure treatment groups.

### *Goal Framing*

Recall that within each time pressure condition, goal framing was manipulated as either positive or negative in the case materials. Specifically, within the context of a brainstorming discussion, led by the engagement manager, participants were provided with a list of either the benefits of behaving professionally skeptical (positive frame) or the consequences that could result from not behaving professionally skeptical (negative frame). The experimental instrument contained three questions to assess participants' frames of professional skepticism following the experimental task (see Figure 3 in chapter 3, which provides a mapping of each question to the experimental instrument provided in Appendix A).

I first considered the success of the framing manipulation by conducting validity checks on Questions 14 through 16 of the experimental instrument (See Appendix A). Several steps were taken to assess the effectiveness of the goal framing manipulation. First, I performed a principal component factor analysis, with varimax rotation for the three questions to provide some initial support that the questions were capturing the same general construct. As presented in Table 5 the three questions loaded on two distinct factors. Cronbach's alpha for the first factor (containing two questions) was .204, indicating no reliability.

Question 16 asked for participants' perception of how professional skepticism was described. Specifically, it asked if professional skepticism was discussed in a more negative or positive manner, with responses from 1 (Extremely Negative) to 7 (Extremely Positive). Results from an independent samples *t*-test between goal framing conditions showed that participants in the negative frame treatment group reported a significantly lower mean value of 3.50, while participants in the positive frame treatment group reported a mean of 5.48 ( $t = -5.048$ ;  $p < .001$ ). These results indicate that the manipulation of goal framing was successful.



**TABLE 5**  
**Factor Analysis – Goal Framing Perceptions Between Treatment Groups**

		<u>Component</u>		<u>Cronbach's</u>
		<u>1</u>	<u>2</u>	<u>alpha</u>
1	Question 14	0.764		
2	Question 15	0.728		<b>0.204</b>
3	Question 16		0.945	

Two additional questions related to goal framing were designed to capture the degree to which participants’ internalized frames of professional skepticism. In other words, although participants may have correctly recalled receiving either a positive or negative frame, they may not have considered the frame while working through the experimental task. One question reads “When I think about professional skepticism, I think more about the consequences of not behaving professionally skeptical than I think about the benefits of behaving professionally skeptical,” with responses ranging from 0 (Fully Disagree) to 100 (Fully Agree). The other question states “After reading this case, I am aware of several negative consequences that can result from not behaving professionally skeptical.”

Analysis of the results from independent samples *t*-tests between goal framing conditions revealed no significant differences between the positive and negative frame groups for either of these two questions. As suggested by factor analysis results, I also combined these two questions into a summary measure to examine differences in between goal framing treatment groups. The results indicated no significant relationship between the framing factor and goal framing treatment groups ( $p = .177$ , one-tailed;  $t = .934$ ). Thus, it is appears that although participants properly recalled receiving either a positive or negative frame describing

professional skepticism, they may not have internalized the framing manipulation, or applied it while working through the experimental task.

### *Measured Independent Variables*

#### *Trait Skepticism*

Trait skepticism is one of the independent variables used in this study and I used the Hurtt (2010) professional skepticism scale as a basis for measuring participants' trait professional skepticism. First, I performed factor analysis on the scale to confirm the theoretical structure of the 30 question scale. Recall that the Hurtt (2010) scale is was designed to capture six theoretical dimensions of professional skepticism. Therefore, I performed a principal components factor analysis, forcing the 30 questions into six factors. As the questions are expected to be correlated, I used oblimin rotation, and suppressed loadings below .30, to eliminate some degree of noise and to focus on the highest loading scores. The results of factor analysis for trait skepticism are presented in Table 6.

As shown in Table 6, the 30 questions loaded onto the six theorized factors of trait professional skepticism. The dimensions are: Search for knowledge, self-confidence, self-determination, suspension of judgment, questioning mind, and interpersonal understanding. To assess the reliability of each of the six factors, I computed Cronbach's alpha for each scale dimension (see Table 7). Cronbach's alpha scores for all six dimensions were greater than .70, indicating a strong degree of reliability (Nunnally, 1978).

**TABLE 6**  
**Trait skepticism scale - Factor Analysis**

	<b>Factor</b>					
	<b><u>1</u></b>	<b><u>2</u></b>	<b><u>3</u></b>	<b><u>4</u></b>	<b><u>5</u></b>	<b><u>6</u></b>
TSearchforknow1	0.918					
TSearchforknow2	0.706					0.326
TSearchforknow3	0.845					
TSearchforknow4	0.766					
TSearchforknow5	0.859					
TSearchforknow6	0.401				-0.483	
Selfconfid1		0.899				
Selfconfid2		0.638	0.322			
Selfconfid3		0.870				0.372
Selfconfid4		0.744				
Selfconfid5		0.890				
Selfdeterm1			0.799			
Selfdeterm2			0.676			
Selfdeterm3			0.731			
Selfdeterm4	0.312		0.514			
Selfdeterm5			0.368	-0.602		
Selfdeterm6			0.333	-0.325	-0.316	0.357
TSuspenjudg1	0.434	0.436		-0.459		
TSuspenjudg2		0.673				
TSuspenjudg3				-0.702		
TSuspenjudg4		0.481				
TSuspenjudg5	0.370		0.330			
TQuestionmind1					-0.794	
TQuestionmind2					-0.802	
TQuestionmind3					-0.537	
InterpersUnd1						0.832
InterpersUnd2						0.686
InterpersUnd3						0.652
InterpersUnd4			0.353			0.553
InterpersUnd5			0.336	0.380	0.458	0.376

While it is apparent that the scale encompasses six distinct dimensions, the scale was developed by Hurtt (2010) to provide a single measure of an individual's total trait professional

skepticism. Therefore, I also performed tests to assess the reliability of the scale as a whole<sup>21</sup>. Results of Cronbach’s alpha indicate a score of .92 for the 30-item scale, indicating a strong degree of reliability.

**TABLE 7**  
**Trait Skepticism Scale - Reliability Statistics**

<u>Scale Dimension</u>	<u># of Items</u>	<u>Cronbach's Alpha</u>
Search for knowledge	6	0.921
Self confidence	5	0.891
Self determination	6	0.736
Suspension of judgment	5	0.801
Questioning mind	3	0.735
Interpersonal Understanding	5	0.817

Several steps were taken to construct the measure of trait skepticism used in this study. Recall that the theoretical range of scores on the trait skepticism scale ranges from 30 to 180, as responses to each of the 30 questions is captured on a 7-point, Likert-type scale ranging from 1 to 6. Actual trait skepticism scores ranged from 93 to a maximum of 170, with a mean score of approximately 139. These results are consistent with previous administrations of the scale to student participants, as Hurtt (2010) reports a mean score of 132.7 with a range of 77 to 175. Using the mean score of 139, I then performed a mean split with trait skepticism scores classified as either high or low (Hurtt 2010). This dichotomy yielded two groups (low trait skepticism: N = 29; and high trait skepticism: N = 36)<sup>22</sup>. I also analyzed trait skepticism as a continuous

---

<sup>21</sup> Of the 65 students who completed the trait scale, 2 students omitted responses to one or more questions. To account for the missing data, I imputed scores for the three missing questions, using the mean scores for each question.

<sup>22</sup> A median split was also performed for trait skepticism. The results do not differ when using a median split instead of a mean split.

measure by utilizing subject's total scores on the trait skepticism scale<sup>23</sup>, thus two separate measurements of trait skepticism were used to analyze the first hypothesis.

#### *State Skepticism - Scale Construction*

A measure of state skepticism is used as an independent variable in Hypothesis 2. State skepticism is also a presumed mediator between trait skepticism and skeptical behavior (Hypothesis 3). To construct a measure of state skepticism, I first used the Hurtt (2010) trait skepticism scale as a basis for the scale questions. Table 2 (chapter 3) illustrates the changes made to each trait skepticism question in order to elicit the final 12 questions used to measure state skepticism. As previously mentioned, the state skepticism scale includes only three of the six dimensions used in the trait skepticism scale relating to the way auditors examine evidence: search for knowledge, suspension of judgment, and questioning mind. I first performed exploratory factor analysis on the 12-item state skepticism scale to see that the 12 questions were capturing the same general construct. Factor analysis results, using a varimax rotation, are presented in Table 6. The results indicate that three factors were extracted from the state skepticism scale. This is not surprising, as the 12 questions represent three of the theorized dimensions of the trait skepticism scale. While the state skepticism questions loaded onto three factors, in order to be consistent with prior research and the developer of the scale, I use individual's total scores on the scale as a measure of state skepticism (Hurtt 2010).

I then computed Cronbach's alpha to assess the reliability of the state skepticism scale. The Cronbach's alpha for the 12-item scale was .869.

---

<sup>23</sup> None of the results using the continuous measure of trait skepticism were significant at an alpha level of .05.

**TABLE 8**  
**Factor Analysis - State Skepticism Scale**

	<b>Rotated Matrix</b>		
	<b>Factor</b>		
	<b><u>1</u></b>	<b><u>2</u></b>	<b><u>3</u></b>
Search_Know11	0.725		
Search_Know12	0.899		-0.302
Search_Know13	0.826		-0.433
Search_Know14	0.816		-0.485
Suspen_judgmnt1	0.440		-0.771
Suspen_judgmnt2	0.456	0.691	
Suspen_judgmnt3		0.711	
Suspen_judgmnt4	0.718		-0.382
Suspen_judgmnt5	0.862		-0.422
Quest_Mind1			-0.684
Quest_Mind2	0.339	0.617	-0.552
Quest_Mind3		0.455	-0.705

To create the independent variable, state skepticism, I performed a median split on total state skepticism scores (low state skepticism: n = 34; high state skepticism: n = 31).

*Dependent Variables*

The two skeptical behaviors used in this study are: Number of evidence envelopes opened and the number of contradictions detected. The first measure (number of evidence envelopes opened) represents the amount of additional evidence sought during the task. Recall that each subject received a packet with three envelopes containing additional audit evidence and participants chose how many envelopes to open. This variable was measured as the actual number of evidence envelopes opened, ranging from 0 to 3.

The second skeptical behavior, number of contradictions detected, was measured using Question 11 of the experimental instrument (see Appendix A). The question asked students to identify contradictions that they believed to be present in the case, and informed students that not all of the contradictions listed were correct. The question provides three correct contradictions

and three incorrect contradictions<sup>24</sup>. This variable was measured by adding one point for each correct contradiction circled and subtracting one point for each incorrect contradiction circled, thus participants responses could range from -3 to +3<sup>25</sup>.

### *Covariates*

In addition to the demographic variables discussed previously (age, gender, years of work experience and years of accounting experience), measures of two additional variables were elicited: mood and risk. First, Question 17 of the experimental instrument asked “How would you describe your mood today, ranging from extremely sad to extremely happy?” Responses to this question were captured on a 7-point Likert-type scale ranging from 1 to 7. Second, three questions (37 through 39) were designed to assess individual’s perceptions regarding risk and general risk-taking (Curtis and Taylor 2009). Each question was measured on a 7-point, Likert-type scale from 1 to 7. Participants’ total risk scores were computed by adding responses to all three questions to create a summary measure.

### *Correlation Analysis*

I performed correlation analysis on my dependent, independent, and covariate variables to obtain preliminary results about the directionality of my hypothesized relationships. Table 9 provides the results of correlation analysis of these variables. As expected, the dependent variable, number of evidence envelopes opened, is significantly correlated with state skepticism ( $p = .052$ ) such that higher state skepticism is correlated with opening a greater number of evidence envelopes. While not hypothesized, the number of evidence envelopes opened is

---

<sup>24</sup> Question 11(Appendix A) contained a list of 7 possible contradictions (labeled “A” through “F”) that were present in the experimental case. Answer choice “C” of Question 11 contained ambiguous wording and was poorly phrased as a contradiction. Thus, answer choice “C” was omitted from analysis and responses to this question were ignored.

<sup>25</sup> I also computed an alternative measure for contradictions detected by counting the total number of items circled, without regard to their correctness. While this measure was tested in hypotheses one and two (described in the following sections), the variable was not significantly related to either trait skepticism ( $F = .484$ ;  $p = .245$ ) or state skepticism ( $F = 1.541$ ;  $p = .110$ ).

highly correlated with time pressure, as greater time pressure is associated with opening fewer evidence envelopes. In order to gain confidence that individual's risk preferences did not influence the number of evidence envelopes opened, I also captured a measure of total risk preference. As anticipated, risk was not significantly correlated with the number of evidence envelopes opened.

The dependent variable, number of contradictions detected, is correlated with time pressure and with state skepticism, in the hypothesized direction. While I expected trait skepticism to also be correlated with both skeptical behaviors (H1), results of correlation analysis do not offer support for these hypothesized relationships.

Consistent with my expectations, time pressure is negatively correlated with state skepticism, such that greater time pressure is correlated with less state skepticism. While these variables are correlated in the hypothesized direction, the relationship is not significant. Contrary to my predictions, results of correlation analysis provide no support for the hypothesized relationship between goal framing and state skepticism (H5). Additionally, no significant correlation was found between trait skepticism and state skepticism (H3). However, this finding provides some interesting evidence regarding the relationship between trait and state skepticism. Specifically, the absence of a significant correlation indicates that the two items are measuring separate constructs. Given that one primary purpose of this study was to distinguish between trait skepticism and state skepticism, these results offer strong support for treating the two types of skepticism as separate constructs.



**TABLE 9**

**Correlation Table for Dependent, Independent, and Covariate Variables**

<u>Variable</u>	<u>Mean</u>	<u>SD</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>
1 Number of evidence env.	1.170	0.977														
2 Number of contradictions	0.820	1.273	.201													
3 State skepticism	51.185	10.949	.654**	.242												
4 Quest_MindTOTAL	14.877	2.580	.123	.186	.677**											
5 Suspen_judgmtTOTAL	24.931	4.565	.493**	.209	.924**	.628**										
6 Search_KnowlTOTAL	17.154	5.814	.815**	.218	.895**	.363**	.710**									
7 Time Pressure	1.570	0.499	-.265*	-.275*	-.231	-0.133	-.223	-.208								
8 Frame Type	1.510	0.504	.140	.051	-.076	-.095	-.069	-.048	.013							
9 Trait skepticism	139.350	16.839	.029	.196	.167	.350**	.202	.006	.004	.089						
10 Gender	1.420	0.497	-.211	.049	-.152	-.094	-.215	-.139	.103	.143	.006					
11 Age	24.890	6.047	.228	-.009	.248*	.224	.251*	.180	-.166	.131	.114	-.073				
12 Yrs_Wrk_Exp	6.462	5.896	.252*	-.041	.222	.177	.184	.203	-.184	.020	.145	-.133	.836**			
13 Yrs_Acct_Exp	1.531	4.716	.282*	-.046	.316*	.208	.320**	.264*	-.237	.072	.061	-.199	.764**	.818**		
14 Risk_Total	16.200	2.617	.042	.009	.158	.214	.142	.097	.109	.177	.247*	-.089	-.087	-.057	-.034	
15 Mood	4.692	1.233	.128	-.116	.195	.264*	.110	.171	.061	-.059	.100	.008	-.022	.040	-.085	.217

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Legend: 1= the number of evidence envelopes opened (0-3), 2= the number of contradictions detected (-3 to 3), 3= overall state skepticism score (7 to 126), 4= questioning mind dimension of state scale, 5= suspension of judgment dimension of state scale, 6= search for knowledge dimension of state scale, 7= time pressure (1 = moderate; 2 = high), 8= Frame type (1 = negative; 2 = positive), 9=overall trait skepticism score (30 to 210), 10= Gender (Female = 1; Male = 2), 11 = Age, 12 = Years of work experience, 13 = years of accounting experience, 14 = Risk, 15 = Mood.

Several demographic variables are included in the correlation analysis. Age is correlated with overall state skepticism and the suspension of judgment dimension of state skepticism. As prior literature suggests that individual's skepticism may be influenced by mood, a self-reported measure of mood was elicited. While mood is not significantly correlated with overall state skepticism, it is significantly correlated with the questioning mind dimension of state skepticism.

## Hypotheses Testing

### *Hypothesis 1*

Hypothesis 1 predicts that trait skepticism is positively related to skeptical behavior. To test Hypothesis 1, I first performed Levene's Test to ensure equality of variances between high and low trait skepticism groups. The test statistic was not significant for either skeptical behavior, indicating equal variance among trait skepticism groups (envelopes opened:  $F = .000$ ;  $p = .492$ , contradictions detected:  $F = .052$ ;  $p = .411$ , one-tailed). Next, I performed MANOVA tests using the dichotomous measure of trait skepticism as the independent variable and both skeptical behaviors as dependent variables. The results of these tests are presented in Table 10, panel A. As shown in Table 10, there is a significant difference in the number of contradictions detected between high ( $M = 1.08$ ) and low ( $M = .48$ ) trait skepticism groups ( $F = 3.73$ ;  $p = .029$ , one-tailed), but no significant difference in the number of evidence envelopes opened ( $F = 1.09$ ;  $p = .150$ , one-tailed).

I also performed MANCOVA to analyze Hypothesis 1, with both skeptical behaviors as dependent variables while controlling for the effects of state professional skepticism (Table 8, panel B). A significant relationship was still found between trait skepticism and the dependent

variable, number of contradictions detected, such that those high on trait skepticism detected a significantly ( $F = 3.309$ ;  $p = .037$ , one-tailed) higher number of contradictions than those low on trait skepticism. These results suggest that even after state skepticism is controlled for, trait skepticism remains a significant predictor for the skeptical behavior, number of contradictions detected.

<b>TABLE 10</b>		
<b>Test Results for Hypothesis 1</b>		
(Independent Variable - Trait Skepticism)		
Panel A		
<b>MANOVA</b>		
<b><u>Dependent Variable</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>
Number of envelopes opened	1.09	0.150
Number of contradictions detected	3.73	0.029*
Panel B		
<b>MANCOVA</b>		
<i>(Controlling for the effects of state skepticism)</i>		
<b><u>Dependent Variable</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>
Number of envelopes opened	3.776	0.029*
Number of contradictions detected	3.309	0.037*

MANCOVA results also reveal a significant difference in the number of evidence envelopes opened by the two skepticism groups, when state skepticism is controlled for. Further analysis indicates that the low trait group opened more envelopes than the high trait group with means of 1.31 and 1.06, respectively ( $F = 3.776$ ;  $p = .029$ , one-tailed). These results do not support the direction of the hypothesized relationships and are inconsistent with those of prior research.

It appears that the influence of trait skepticism on skeptical behavior persists, even after the effects of state skepticism are removed, for the skeptical behavior, number of contradictions

detected. For the skeptical behavior, number of evidence envelopes opened, controlling for state skepticism makes the hypothesized relationship stronger ( $p = .029$ ), but not in the hypothesized direction. However, because one relationship is not in the hypothesized direction, Hypothesis 1 is partially supported.

### *Hypothesis 2*

Hypothesis 2 predicts that higher state professional skepticism is associated with greater skeptical behavior. As discussed, a measure of state professional skepticism was constructed, based on the Hurtt (2010) trait professional skepticism scale (see Table 2 for the construction of the state skepticism scale).

To test Hypothesis 2, I first performed Levene's test for equal variance. Results of this test revealed equal variance between high and low state skepticism groups for both skeptical behaviors (envelopes opened:  $F = .754$ ;  $p = .195$ , contradictions detected:  $F = .033$ ;  $p = .429$ , one-tailed). Next, I performed MANOVA tests, comparing scores for each skeptical behavior between high and low state skepticism groups. Results of MANOVA illustrate significant differences between high and low state skepticism groups in skeptical behavior. Additional analysis reveals that high state skepticism participants opened a significantly higher number of evidence envelopes ( $M = 1.68$ ) than low state skepticism participants ( $M = 0.71$ ;  $F = 21.038$ ;  $p = .000$ , one-tailed). Also, high state skepticism participants detected a significantly greater number of contradictions ( $M = 1.23$ ) than low state skepticism participants ( $M = 0.44$ ;  $F = 6.705$ ;  $p = .006$ , one-tailed). These results are presented in Table 11.

I performed additional analysis for Hypothesis 2 to control for the effects of trait skepticism as well as other demographic covariates. Specifically, I performed MANCOVA using trait skepticism, years of work experience, and years of accounting experience as

covariates in three separate MANCOVA tests<sup>26</sup>. Recall that correlation analysis demonstrated significant correlations between the skeptical behavior, number of envelopes opened, and two demographic variables: years of work experience and years of accounting experience. The results of Hypothesis 2 are unchanged after controlling for trait skepticism, years of work experience and years of accounting experience. Hence, Hypothesis 2 is supported.

**TABLE 11**  
**MANCOVA Test Results for Hypothesis 2**  
*(Independent variable - State Skepticism)*

*(Dependent Variable - Number of evidence envelopes)*

<b><u>Variable</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>
State Skepticism	21.038	0.000**		
Trait skepticism			0.003	0.477
Years of work experience			2.398	0.064
Years of accounting experience			1.982	0.082

*(Dependent Variable - Number of contradictions detected)*

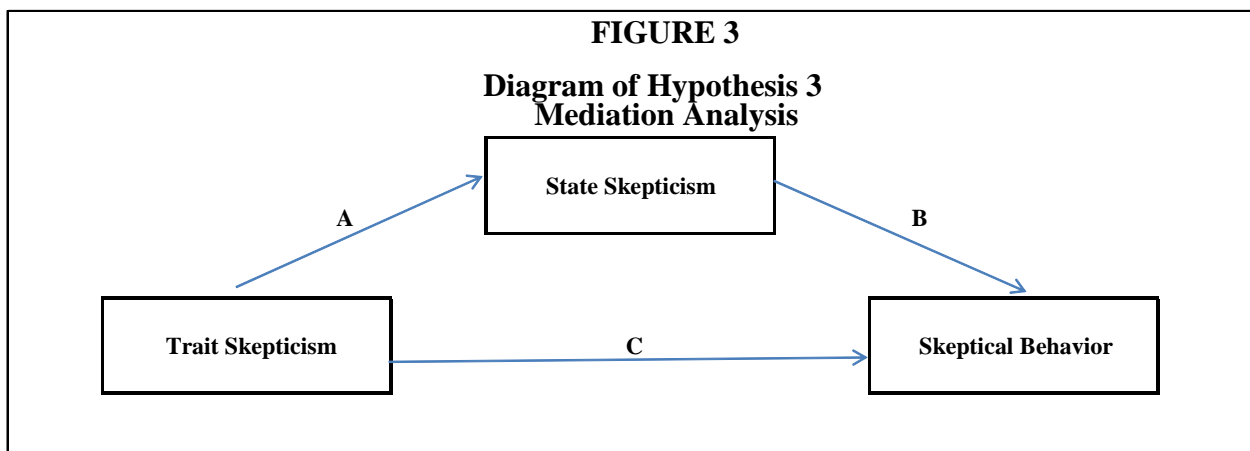
<b><u>Variable</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>	<b><u>F</u></b>	<b><u>p-value</u></b>
State Skepticism	6.705	0.006**		
Trait skepticism			2.376	0.064
Years of work experience			0.641	0.213
Years of accounting experience			1.270	0.132

### *Hypothesis 3*

The third hypothesis posits that state skepticism partially mediates the relationship between trait skepticism and skeptical behavior. Figure 3 illustrates the hypothesized relationship. To test Hypothesis 3, I performed mediation analysis using the process established by Baron and Kenny (1986). Their criterion establishes four steps to test for mediation. First a

<sup>26</sup> The results for Hypothesis 2 do not significantly differ when using all three covariates in a single MANCOVA test, rather than using them individually.

significant relationship must exist between the independent variable (trait skepticism) and the presumed mediator, as shown in path A of Figure 3. Second, a significant relationship must exist between the presumed mediator (state skepticism) and the dependent variable (skeptical behavior) depicted in path B. Third, path C of Figure 3 depicts the requirement that the independent variable (trait skepticism) is significantly associated with the outcome variable (skeptical behavior). Last, the relationship between the independent variable (trait skepticism) and the dependent variable (skeptical behavior) is examined, while controlling for paths A and B. If the relationship between trait skepticism and skeptical behavior is significantly reduced, then state skepticism is considered a mediator variable.



To test this hypothesis, I first performed regression analysis to examine the relationship between trait skepticism and state skepticism<sup>27</sup>(path A of Figure 3). As shown in Table 10, the analysis yielded no significant relationship between trait and state skepticism ( $t = 1.342$ ;  $p = .092$ , one-tailed). In fact, correlation analysis (Table 9) also indicated no significant correlation between trait skepticism and state skepticism. Hence, the first step of Baron and Kenny’s (1986) criteria of mediation was not satisfied.

<sup>27</sup> This test was performed using the dichotomous trait skepticism variable and the continuous state skepticism variable.

While the Barron and Kenny steps were used to test the hypothesized mediation, prior research has documented several limitations with their statistical test. For instance, Shrout and Bolger (2010) argue that Baron and Kenny's requirement of a significant relation between the independent and dependent variable is too stringent, in the presence of a small effect size. MacKinnon, Fairchild and Fritz (2007) make similar arguments, noting that Baron and Kenny's causal step test severely reduces the statistical power to detect mediation (p. 7). Given the theoretical limitations described above, an alternative test was used for mediation.

Specifically, I also tested Hypothesis 3 by performing a Sobel test of mediation. Two Sobel tests were performed independently, using each of the skeptical behaviors as dependent variables. Results of the first Sobel test, using the number of evidence envelopes opened, showed that state skepticism partially mediated the relationship between trait skepticism (continuous variable) and that particular skeptical behavior ( $p = .025$ , one-tailed). The second Sobel test revealed state skepticism as a partial mediator between trait skepticism and the number of contradictions detected, though this relationship was only marginally significant ( $p = .077$ , one-tailed). These results are presented in the Table 12 below. In summary, while the Baron and Kenny test of mediation provided no support for state skepticism as a mediator in the relationship between trait skepticism and skeptical behavior, the Sobel test of mediation provided partial support that state skepticism mediated the relationship between trait skepticism and one of the skeptical behaviors (# of evidence envelopes opened). Therefore, Hypothesis 3 is partially supported.

<b>TABLE 12</b>		
<b>Hypothesis 3 - Results of Mediation Analysis</b>		
<b>Baron and Kenny</b>		
Path A	<u>t- statistic</u>	<u>p-value</u>
	1.342	0.092
<b>Sobel</b>		
	<u>Test statistic</u>	<u>p-value</u>
Number of envelopes opened	1.958	0.0251*
Number of contradictions detected	1.426	0.0767

P-values are one-tailed; \*significant at the .05 alpha level

#### *Hypothesis 4*

Hypothesis 4 predicts that individuals under high time pressure will exhibit lower state skepticism than individuals under moderate time pressure. To test Hypothesis 4, I first used Levene's test for equality of variances, to ensure homogeneity of variance among time pressure treatment groups. The Levene's test indicated equal variance among treatment groups, as the test statistic ( $F = .035$ ) was not significant ( $p = .853$ ).

Next, I performed an independent samples *t*-test, comparing state skepticism means between moderate and high time pressure treatment groups<sup>28</sup>. As shown in Table 13, the mean state skepticism score for the high time pressure group ( $M = 54.74$ ) was significantly lower than the mean state skepticism score for the moderate time pressure group ( $M = 59.89$ ;  $p = .033$ ).

<sup>28</sup> A continuous measure of state skepticism was used when the measure is used as a dependent variable.



**Table 13**

**Statistical Analysis for Time Pressure and State Skepticism Relation - Hypothesis 4**

	<b>Time Pressure Treatment Group</b>			
	Moderate (N = 28)	High (N = 37)		
<b>Dependent Variable</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>t-statistic</b>	<b>P-value</b>
State Skepticism	59.893 (10.293)	54.743 (11.418)	1.878	0.0325*

\*Significant at .05 level

I performed additional tests to control for other potential influences on state skepticism. For instance, some research suggests that an individual’s mood influences the degree of skepticism that they experience, such that negative (positive) mood increases (decreases) skepticism (Forgas and East 2008). I used ANCOVA tests to examine the influence of mood on state skepticism, by including mood as a covariate in the analysis. While mood was significantly related to state skepticism ( $p = .044$ , one-tailed), the presence of this covariate did not change the results of hypothesis testing, as time pressure was still significantly related to state skepticism ( $p = .024$ ). Additional ANCOVA tests were conducted separately, using the following covariates: gender, age, years of work experience<sup>29</sup>, and years of accounting experience<sup>29</sup>. The results of these tests are presented in Table 14.

<sup>29</sup> I also analyzed the results by performing ANOVA using all covariates, simultaneously, in a single ANOVA test. When all covariates are included, the p-value for the time pressure variable remains marginally significant ( $p = .084$ ).

**TABLE 14**  
**ANOVA Test Results for Time Pressure and State Skepticism Relation -**  
**Hypothesis 4**  
*(Covariate Analysis)*

<b>Variable</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>p-value</b>
Time Pressure	1	422.664	3.525	0.0325*
Mood	1	350.059	3.013	0.044*
Gender	1	201.254	1.697	0.099
Age	1	362.144	3.122	0.041*
Years of Work Experience	1	265.767	2.261	0.070
Years of Accounting Experience	1	577.677	5.134	.0135*

\*Significant at .05 level

The results remain significant after controlling for the presence of age, gender, and years of work experience<sup>30</sup>. Inclusion of years of accounting experience as a covariate makes the results of Hypothesis 2 less significant ( $p = .09$ , one-tailed). While not statistically significant, the results illustrate a general tendency for participants with no accounting experience to exhibit greater state skepticism than those participants that have some accounting work experience. This outcome is consistent with much of prior accounting research, suggesting a greater proclivity towards skepticism (and higher fraud-related suspicion) for novice auditors or those with little or no experience (Fullerton and Durtschi 2004; Shaub and Lawrence 1999).

Last, I analyzed Hypothesis 4 using the nonparametric Mann-Whitney test and the median split state skepticism score. Based on the analysis, the nonparametric test is consistent

---

<sup>30</sup> Using covariates age and years of work experiences yields a  $p$  value = .059, which is deemed marginally significant.

with ANOVA results, such that differences in median state skepticism scores significantly differ across moderate and high time pressure treatment groups ( $p = .028$ ). In summary, results of analysis provide support for Hypothesis 4, as significant differences exist in state skepticism between moderate and high time pressure participants.

#### *Hypothesis 5*

Hypothesis 5 predicts that individuals provided with a negative goal frame will exhibit higher levels of state skepticism than those individuals provided with a positive goal frame. Recall that the frames used in this experiment describe either the benefits of behaving professionally skeptical or the consequences that could result from not behaving professionally skeptical. As previously discussed, the results of independent samples  $t$ -test indicated that overall, participants correctly recalled receiving either a positive or negative frame, but appeared to not internalize those frames during the judgment and decision making task.

To test Hypothesis 5, I first performed an independent samples  $t$ -test. Participants in the negative goal frame treatment group reported a higher mean state skepticism score than participants in the positive goal frame treatment group, with means of 57.81 and 56.14, respectively. However, these results were not significant ( $t = .602$ ;  $p = .275$ ). Given the support found for Hypothesis 4, I conducted ANCOVA tests to investigate whether removing some of the variance in state skepticism, due to time pressure, might reveal support for the framing manipulation. These tests were consistent with initial  $t$ -tests such that goal framing was not a significant predictor of state skepticism ( $p = .279$ ). I also performed the nonparametric Mann-Whitney test to test Hypothesis 5. Results of the test were not significant ( $p = .423$ ). Therefore, Hypothesis 5 is not supported.

Finally, I performed ANOVA to test for an interaction between the two manipulated independent variables: time pressure and goal framing, on state skepticism. Results of these tests reveal no significant interaction ( $F = .848$ ;  $p = .181$ , one-tailed). Table 16 provides means and standard deviations for state skepticism across manipulated levels of time pressure and goal framing.

**TABLE 15**

**Statistical Analysis for Goal Framing and State Skepticism Relation - Hypothesis 5**

<b>Dependent Variable</b>	<b>Goal Frame Treatment Group</b>		<b>t-statistic</b>	<b>P-value</b>
	Positive (N = 33)	Negative (N = 32)		
	<b>Mean (SD)</b>	<b>Mean (SD)</b>		
State Skepticism	56.136 (8.220)	57.813 (13.505)	0.602	0.275

**TABLE 16**

**Total State Professional Skepticism Assessment**  
(Across Manipulated Levels)

<b>Time Pressure</b>	<b>Goal Frame Treatment Group</b>				<b>Total</b>	
	Positive		Negative			
	<b>Mean (SD)</b>	<b>N</b>	<b>Mean (SD)</b>	<b>N</b>	<b>Mean (SD)</b>	<b>N</b>
High Time Pressure	52.895 (13.177)	19	56.694 (9.186)	18	54.743 (11.418)	37
Moderate Time Pressure	60.536 (13.129)	14	59.250 (6.841)	14	59.893 (10.293)	28
<b>Total</b>	56.136 (13.505)	33	57.813 (8.220)	32	56.962 (11.164)	65

## Supplemental Analysis

Recall that the state skepticism scale includes questions from three categories related to the way auditors evaluate evidence: a questioning mind, suspension of judgment, and search for knowledge. Using varimax rotation, the factor analysis indicates that three distinct factors were extracted. These results provide support for the three dimension of the state skepticism scale. As one goal of this study is to create a measure of state skepticism, further exploration of the state skepticism scale is warranted. I performed additional MANOVA tests using each of the three dimensions as independent variables to examine their respective influences on each skeptical behavior. The results indicate a significant relationship between two of the state scale dimensions: suspension of judgment ( $F = 1.983$ ;  $p = .014$ ) and search for knowledge ( $F = 5.357$ ;  $p = .000$ ) and the skeptical behavior, number of evidence envelopes opened. Thus, it appears that the questioning mind dimension may be less important than the other dimensions in predicting skeptical behavior.

While the primary focus of my dissertation was to examine the influence of professional skepticism (trait and state) on skeptical behavior, I also included questions designed to capture participants' intermediate judgments regarding the reasonableness of management's estimates. These two questions (3 and 4) were adapted from the original case of Kaplan and Reckers (1995). As part of supplemental analysis, I used MANOVA to test the influence of trait and state skepticism on subject's intermediate judgments regarding management's intentions. Recall the Nelson's (2009) model of auditor professional skepticism identified skeptical judgment as the precursor to skeptical action, thus illustrating the important role of skeptical judgments in predicting skeptical behavior. The results indicate a significant relationship between trait skepticism and intermediate judgment regarding management's intentions. Specifically, when

asked “To what extent do you believe that the estimates adopted by the client are “good faith” best estimates to give a fair representation of net income?” Low trait skepticism participants reported higher mean agreement ( $M = 4.59$ ) than high trait skepticism participants ( $M = 4.06$ ;  $F = 2.396$ ;  $p = .0635$ ). Also, when asked “To what extent do you believe that client estimates were motivated by the desire to improve net income artificially?” high trait skepticism participants reported higher mean agreement ( $M = 4.81$ ) than low trait skepticism participants ( $M = 4.14$ ,  $F = 3.197$ ;  $p = .0395$ ). Taken together, the results appear to suggest that trait skepticism may be more predictive of skeptical judgment than skeptical behavior.

I also performed additional tests to investigate the relationship between state skepticism and intermediate skeptical judgments. The results were similar to those above, as a marginally significant relationship was found between state skepticism and both intermediate judgment questions (3 and 4), respectively ( $F = 2.114$ ;  $p = .075$  and  $F = 5.823$ ;  $p = .009$ ). Based on the analysis, low state skepticism participants reported higher mean agreement for Question 3 ( $M = 4.53$ ) than high state skepticism participants ( $M = 4.03$ ) and lower mean agreement for Question 4 ( $M = 4.09$ ) than high state skepticism participants ( $M = 4.97$ ). Collectively, these results suggest that higher state skepticism is also associated with greater intermediate skeptical judgment.

## CHAPTER 5

### CONCLUSION

In this chapter, I conclude my dissertation and provide a summary of my experimental results. Additionally, I discuss limitations of my study and offer suggestions for the direction of future research in the area of auditor professional skepticism.

#### Discussion

The purpose of my dissertation was two-fold. First, I examined the effects of both trait and state skepticism on skeptical behavior, offering insight into the relationship between the two types of skepticism. Second, I examined two potential influences on state skepticism, (time pressure and goal framing) asserting that while time pressure likely decreased state skepticism, goal framing was perhaps one technique that might mitigate some of the adverse effects of time pressure. These theoretical predictions were tested by administering an experimental instrument to junior and senior-level accounting students. My experimental instrument captured measures of trait and state skepticism to assess their influence on two skeptical behaviors identified in prior research, evidence assessment and contradiction detection. Also, time pressure and goal framing were manipulated between subjects by randomly assigning individuals to either a moderate or high time pressure group and providing them with either positive or negative frames of professionally skeptical behavior. Participants completed the task of evaluating a managerial estimate of bad debt expense which was included as part of a hypothetical audit case scenario. I used this task as a means of eliciting participants' perceptions regarding the professional skepticism that they exercised while working on the audit case.

Results from my experiment support prior research findings that have investigated trait professional skepticism. Specifically, my results suggest that trait skepticism does influence certain skeptical behaviors, as high trait skepticism participants were able to detect significantly more correct contradictions than low trait skepticism participants. My results revealed that trait skepticism also significantly influenced the skeptical behavior, number of evidence envelopes opened; however these results were opposite the hypothesized direction. Prior research in psychology and organizational behavior has discussed the “general,” rather than specific nature of traits in predicting behavior. Further, prior research suggests that for some traits, measurements of behavior, across multiple settings, might offer greater predictive ability for the influence of traits on specific behaviors. Thus, it is possible that in order to fully examine this particular skeptical behavior, longitudinal, rather than cross-sectional data might be more useful.

The results of my experiment also support the distinction between trait professional skepticism and state professional skepticism as separate, measureable constructs. Though prior research has primarily focused on trait skepticism, little attention has been devoted to understanding the temporary condition of state skepticism. This distinction is critical because professional skepticism as a state can be influenced, while traits are far less malleable. Moreover, auditing firms can take measures to increase employees’ state professional skepticism levels, when an increase in skepticism is warranted. Thus, one of the primary contributions of this research is the development of a scale designed to measure state professional skepticism. The state professional skepticism scale was constructed using the Hurtt (2010) trait professional skepticism scale as a base, with modification and elimination of various scale dimensions and questions. Additionally, the state skepticism scale included new questions in the “search for



knowledge” category to illustrate how the existence of incentives influence individual’s decisions to search for additional audit evidence.

My findings also appear to suggest that state skepticism influences individuals’ skeptical behavior even more strongly than trait professional skepticism. As such, it is possible that the auditing environment itself is perhaps more important in shaping auditor professional skepticism, than auditor’s individual levels of trait professional skepticism.

The results of my dissertation are consistent with prior research, in that excessive levels of time pressure were found to decrease participants’ overall task effectiveness, and skeptical behavior. This is evidenced by the fact that, on average, individual’s in the high time pressure condition were able to detect fewer contradictions in the audit case study, chose to examine less evidence, and self-reported lower state skepticism scores than their moderate time pressure counterparts. As previously discussed in chapter two, various forms of time pressure are extremely common in typical audit settings and much of prior accounting research has focused on aspects of time pressure and subsequent auditor performance (Asare et al. 1997; Waggoner and Cashell 1991; AICPA 1978). Moreover, DeZoort and Lord (1997) emphasize that of all forms of pressure, time pressure is the most common in accounting settings. Given the emphasis placed on time budgets in audit practice, this study extends prior literature by offering insight into another potentially adverse effect of time pressure. Specifically, my results provided evidence to suggest that high levels of time pressure only exacerbate the current problem of auditors’ continued breaches in failing to exhibit the necessary degree of professional skepticism. Given the influence of high time pressure, this research offered goal framing as one potential solution for improving individuals’ state skepticism levels. However, contrary to my prediction, the results suggest that providing participants with negative frames (as opposed to positive

frames) of professionally skeptical behavior was not a strong enough catalyst to elicit an increase in their overall levels of state skepticism.

In summary, the results of my dissertation should contribute to audit practitioners as well as audit firms. Specifically, it would behoove auditors to be aware of the potential adverse effects that time pressure may have on their audit judgment as well as aspects of their audit performance. When auditors are faced with high time pressure situations, it remains an important task to exhibit professional skepticism while conducting audit tests and while interacting with client management. Failure to do so, may lead to breaches of established auditing standards.

Also, audit firms should be aware of the important influence that the firm environment may have on employees' state skepticism levels. Results from my study suggest that the temporary condition of state skepticism can be influenced by contextual factors (such as time pressure) as well as individual's personality characteristics (such as trait skepticism). In addition, firms may consider screening potential employees for measures of trait professional skepticism. Results from supplemental analysis revealed that trait skepticism significantly influenced intermediate skeptical judgments. Thus, information regarding employees' trait skepticism levels may provide insight into their judgment processes and proclivity to exhibit certain skeptical behaviors.

### Limitations

As with any research endeavor, my dissertation is subject to certain limitations, which potentially restrict the generalizability of my research findings. First, given the time constraints

of an experimental setting, it is impractical to provide participants with a complete set of audit work papers with all relevant company information. Thus, the hypothetical case scenario included only limited information (select financial data, information describing an audit issue, and excerpts from a fictitious interview with client personnel) to assist participants in their decision making task. Therefore, some degree of realism was sacrificed in order to meet the objectives of this research study. However, the case was adapted from a published case used in prior accounting research (Kaplan and Reckers, 1995) to examine factors that influence auditor judgments and decisions related to client estimates. The use of this case offers some assurance that the case is appropriate for examining issues related to judgments about managerial estimates, such as auditor professional skepticism.

The second limitation of this dissertation relates to my experimental design. Auditors' evidence assessment includes both the nature, timing, and extent of audit evidence obtained. In my experiment, I examined only one aspect of evidence evaluation, which was the amount of evidence that participants decided to examine. I operationalized the amount of evidence obtained by allowing participants the choice of whether to collect up to three additional pieces of audit evidence. However, aspects of the type of audit evidence collected were not included as part of this study. In practice, auditors would be faced with far more choices regarding the amount of evidence to collect, as well as the types of audit evidence that they could collect. Thus, my experimental design lacked some degree of external realism, as it specifically focused on just one of many aspects of evidence evaluation. However, one important advantage of using an experiment is the ability to control for other factors. Thus, while some degree of external validity may have been sacrificed, the experiment allowed for a strong degree of internal validity in testing the hypothesized relationships.

The final limitation of this study relates to the small sample size, as a total of 65 participants were used. Participants were randomly assigned to one of four treatment groups crossing time pressure and goal framing in the following group totals: High time pressure/positive frame (19), high time pressure/negative frame (18), moderate time pressure/positive frame (14), and moderate time pressure/negative frame (14). It is possible that use of a larger sample may have allowed for stronger support of my hypothesized relationships. Recall that Hypothesis 5 was not supported, and it is possible that a larger sample with greater statistical power may have revealed some support for this hypothesis. However, despite the small sample size, my results yielded strong support for hypotheses two and four, while hypotheses one and three received partial support.

### Future Research

While various studies have examined issues surrounding auditor professional skepticism, there is still a great deal of uncertainty regarding the composition of and specific characteristics of professional skepticism. Indeed the Nelson (2009) model of professional skepticism provides a unique framework for examining influences of skeptical actions, such as knowledge, experience, incentives, and skeptical judgment. Also, the Hurtt (2010) professional skepticism scale provides one comprehensive measure of six theoretical dimensions thought to capture the professional skepticism trait. Despite these advances in the auditing literature, there remains a great deal to be learned about the various factors that influence auditor professional skepticism.

The results of my dissertation support the distinction between trait and state professional skepticism and the treatment of these items as separate measurable constructs. Considering these

findings, one potential area for future research involves examining some of the other environmental factors that influence state professional skepticism. Moreover, future research could continue to build on the state skepticism construct by creating alternative scales which provide a direct measure of state professional skepticism. This study attempted to construct such a measure to assist future researchers in: 1) Examining other factors that influence state skepticism; and 2) investigating differences in auditor judgment or behavior that result from differences in state skepticism.

Research that explores ways to improve or increase professional skepticism should be useful to accounting researchers, audit practitioners, and professional services firms. While this study suggested goal framing as one mechanism for improving state professional skepticism, the results revealed no significant relationship between goal framing and state skepticism. However, it is possible that alternative types of framing or use of different experimental designs might provide further insight into the efficacy of framing to improve auditor state skepticism.

Finally, one additional area for future research is considering how professional skepticism influences auditor judgments throughout various phases of the audit process, such as planning, evidence assessment, and analytical procedures. It may be that auditor's skeptical judgments are more apparent during particular phases of the audit engagement. While my dissertation focused on examining two specific skeptical behaviors, prior literature in psychology and auditing has found that judgments do not always transcend into behavioral actions. In other words, it is possible that some auditors may experience skeptical judgment or a skeptical mindset, but fail to act on those judgments by following through with skeptical actions. Research that explores the potential disconnects between skeptical judgment and action is important for extending the current body of literature on professional skepticism.

APPENDIX A  
EXPERIMENTAL INSTRUMENT

## **Instructions**

Hello. Thank you for your participation in this exercise. The exercise will consist of two parts. First, you will read a case that deals with an audit-related topic. You will be provided with client background information, partial financial statements, and information from an interview that you have with the client's controller. After working through the case, you will answer some questions. At the end, you may be asked to recall some contradictory information, in the event that it appears in your case. Thus, it is important to read your materials carefully so that you can provide the best answers to the case. In part 2, you will answer some final questions to wrap up the exercise. A calculator is provided in your packet, in case you need one.

## **Compensation**

There will be some cash prizes (from \$20 up to \$50) awarded at the end of the exercise and you will have the chance to enter up to 10 tickets into the cash drawings. Obviously, the more tickets that you have, the better your chances will be to win the cash. However, only students with the correct answer to the case will be allowed to place their tickets into the drawing. Therefore, it is important to arrive at the correct judgment, in the most efficient manner. Other students sitting next to you may have different information. Be sure to focus **ONLY** on your materials and do not be influenced by what others around you are doing.

## **Time**

Once we begin, you will have **only 15 minutes** to complete part 1 of this case. The time frame of 15 minutes is extremely limited. Participating in this case will provide you with an experience similar to what professional auditors are faced with in real-life settings, as they do not have an unlimited amount of time to complete the full audit. In the past, only about **45%** of students completing this type of case have been able to complete the case in the time provided to you today.

Thanks in advance for your participation today.

Shani N. Robinson, CPA

## **Case Materials**

### **Client Background Information**

Associated Industries is a publicly traded (NYSE) corporation founded in 1956. The firm manufactures a variety of large and small products for several industries as well as engaging in large-scale construction projects. Your audit firm has been auditing Associated Industries for several years. The audit engagement has never produced any major auditor/client disagreements and the audit team has commented that the client has great internal controls. Imagine that **you are the staff auditor** on the audit this year. The following pages introduce key members of the company and provide you with information about a specific audit issue.

### **Cast of Characters**

#### **Bill Kaiman – The CEO of Associated Industries**



- Has been with the company for ten years. Reputed to be extremely wealthy but lives a life of austerity with little or no luxury purchases.
- Mentions that the company has been collecting on its accounts quite well, with a collection period of about one month. In addition, six of the ten largest customer accounts have a strong financial record, with no signs of bankruptcy.

#### **Phil Wilson – The Controller of Associated Industries**



- Has been with the company for 5 years.
- Lives a conservative lifestyle and has not purchased a new car in the past several years.
- Conducts an interview with you to answer questions about this year's audit.

#### **You – The Staff Auditor**



- You have been at the firm for 2 years.
- You are working with an intern in the audit of the bad debt expense.





*Experimental instrument for moderate time pressure and negative framing condition*

**Instructions**

Hello. Thank you for your participation in this exercise. The exercise will consist of two parts. First, you will read a case that deals with an audit-related topic. You will be provided with client background information, partial financial statements, and information from an interview that you have with the client's controller. After working through the case, you will answer some questions. At the end, you may be asked to recall some contradictory information, in the event that it appears in your case. Thus, it is important to read your materials carefully so that you can provide the best answers to the case. In part 2, you will answer some final questions to wrap up the exercise. A calculator is provided in your packet, in case you need one.

**Compensation**

There will be some cash prizes (from \$20 up to \$50) awarded at the end of the exercise and you will have the chance to enter up to 10 tickets into the cash drawings. Obviously, the more tickets that you have, the better your chances will be to win the cash. However, only students with the correct answer to the case will be allowed to place their tickets into the drawing. Therefore, it is important to arrive at the correct judgment, in the most efficient manner. Other students sitting next to you may have different information. Be sure to focus **ONLY** on your materials and do not be influenced by what others around you are doing.

**Time**

Once we begin, you will have a **full 15 minutes** to complete part 1 of this case. The time frame of 15 minutes is quite reasonable. Participating in this case will provide you with an experience similar to what professional auditors are faced with in real-life settings, as they do not have an unlimited amount of time to complete the full audit. In the past, about **95%** of students completing this type of case have been able to complete the case in the time provided to you today.

Thanks in advance for your participation today.

Shani N. Robinson, CPA

**Brainstorming session information – (Negative goal frame)**

Recall that you are the staff auditor working on the audit engagement. The **engagement manager** of your audit firm conducts a brainstorming meeting with your audit engagement team to emphasize, among other things, the consequences that can result from having a lack of **professional judgment and professional skepticism** during this audit. Specifically, your manager reminds you of several consequences that can result from failing to exercise the appropriate degree of professional skepticism. These **consequences** are listed for you below.

- First, not exercising professional skepticism can cause you to fail to detect misstatements and/or fraud, which will deteriorate your firm's reputation. Firms with lower reputations are more likely to lose clients or fail to attract new audit clients, thus decreasing the firm's revenues.
- Second, lack of professional skepticism can have a negative effect on your performance as an auditor, and your salary will be based on how well you perform.
- Third, lack of appropriate professional skepticism is more likely to lead to an audit failure, in which the wrong audit opinion is given.
- Last, not being professionally skeptical means that you are less thorough, and therefore are more likely to incur the negative penalties that SOX imposes on auditors who are not thorough enough. For example, recall that auditors working for the firm, Arthur Andersen, were prosecuted and sentenced to jail for failing to exercise due professional care while auditing Enron. Subsequently, Arthur Andersen went bankrupt and ceased operations.

### *Audit information*

At this time, the audit is nearly complete. Today **you will meet with Bill Kaiman**, the CEO of Associated Industries. The main item on the agenda is the proposed adjustment for bad debt expense. During the conduct of the audit, the interns proposed an adjustment to bad debt expense that is described in the next section. You are aware that Kaiman is not going to welcome any reductions in reported income. Recent performance has not been very good and **this year's (2010) increase in net income over last year is certainly welcomed by management**.

### *The issue – Estimate of Bad Debt Expense*

There is some disagreement about the allowance for doubtful accounts in Associated's electronics divisions where extended credit terms are granted. The client uses the "percentage of sales" method for calculating bad debt expense. This year the client has adopted a **new percentage figure** to calculate bad debts expense and the related Allowance for Doubtful Accounts.

The rate is significantly less than the rate used over the last five years. Phil insists that **the new rate is within a published average range** provided in industry association literature and that the figure is more appropriate (better) than earlier percentage rates used by the firm because the economy and economic environment has drastically improved. Phil does not want to make the adjustment that was proposed by your audit intern because he believes that the company's current estimate for bad debt is reasonable. Bill believes that the adjustments are not required because an estimate does not have to be perfect, only reasonable, and none of the items is off materially.

Phil and Bill both note that the company has changed its credit-granting policy during the year and therefore changes to bad debt estimates are reasonable.

The audit intern working on this client is a senior-level accounting student with **no prior accounting work experience**. Your audit intern thinks that Associated Industries may need to increase their estimate for bad debt expense and recommends that the client use a percentage rate that is similar to what they have used in the last five years. The percentage rate that Associated has used in the past is 40% higher than the rate they are using this year. In prior audits, documentation has shown **no indication for management to manipulate income** by decreasing the company's expenses

Your intern recommends that an adjustment be made to bad debt expense for \$3,020. This adjustment will increase bad debt expense by \$3,020 and as a result, it will decrease net income by the same amount. Partial financial statements and ratios, provided by the client, are provided below.

<i>Selected Financial Information for Associated Industries</i>			
		prior year	current year (unaudited)
<b>Balance Sheet:</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Cash	150,000	175,000	169,000
Account Receivable	47,000	50,000	60,000
- (less allowance for doubtful Accounts)	8,750	9,175	4,515
Net Accounts Receivable	38,250	40,825	55,485
Percentage used for bad debt expense	2.5%	2.5%	1.5%
<b>Income Statement:</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Net Sales	350,000	367,000	301,000
Cost of goods sold	70,000	95,000	60,100
Gross profit	280,000	272,000	240,900
Selling Expenses:			
Bad debt expense	8,750	9,175	4,515
Other selling expenses	24,000	29,000	19,000
General and administrative expenses	27,000	39,000	21,000
Net Income	220,250	194,825	196,385
<b>Selected ratio information for the last two years</b>			
2009 - A/R Turnover = 9.3; # of days sales = 39			
2008 - A/R Turnover = 9.2; # of days sales = 40			

After reviewing the financial statements and other information provided by the client, **you make some inquiries** of Phil Wilson, the controller. During the interview, he provides you with the following information:

- The 2010 official economic report shows considerable improvement in the economy, particularly within the client's industry, manufacturing.
- Last year, the company had sales of \$ 367,000 and had total write-offs in the amount of \$ 9,000. The write-offs were less than the company had estimated, and Phil says this is just one example that shows that Associated Industries is conservative and often estimates too much for bad debt expense, rather than not enough.
- Associated Industries' sales have steadily increased since 2008, and an increase in accounts receivable is to be expected.
- When you asked Phil how well they have collected on large, past-due accounts, he informed you that last year (2009), the company did very well in collections. He also informs you that of the 10 largest customers with past-due accounts, the credit manager examined the credit reports of those customers and all but two are financially sound (with no bankruptcies), which makes it likely that they will pay the balance due.
- The new credit manager hired last year is an outstanding employee and has made some great changes within the credit granting area. The company believes these changes will improve its collections.
- The accounts receivable turnover improved from 2008 to 2009, and the company collected on most accounts within 29 days last year. The closest competitor took an average of 45 days to collect on accounts.

### **Your Task**

At this point, you should now start to consider the reasonableness of management's estimate of bad debt expense based on the information that is available to you. As previously mentioned, you will have **ONLY 15 minutes to complete part 1** of this case. Auditors often do one or more of the steps below during analytical procedures:

1. *Develop an expectation of what a reasonable range should be for bad debt expense and accounts receivable (These ranges were developed by your manager and are provided to you below). Ask yourself "what percentage (or dollar amount) difference between the client's number and your expectation can still be considered reasonable?" For example, a difference of \$100 would probably not be material enough to create a significant difference*
  - i. Expected range for Accounts Receivable (49,000 – 65,000)
  - ii. Expected range for Bad Debt Expense (4,500 – 8,000)
2. *Compare the current year account balances to balances from one or more prior year.*
3. *Consider financial ratios related to bad debts and accounts receivable. Recall from the class discussion:*
  - a. *A/R Turnover measures how quickly a firm collects its accounts receivable and the higher the ratio, the better. The calculation is net sales divided by average accounts receivable.*
  - b. *# of days sales measures the average number of days that it takes to collect on accounts, thus the lower the ratio, the better. The calculation is 365 divided by the A/R Turnover.*
4. *Consider any similar information for the industry.*
5. *Consider any non-financial information about the company that might be useful for assessing the motivations of management.*
6. *Make inquiries of the client to investigate any issues. (Note - You have already made inquiries with the controller, Phil, and may refer to that information).*

***Before proceeding with this case, please list two benefits of professional skepticism in the space below:***

*Part 1. Please answer the following questions as completely as possible. No identifying information will be collected, thus your responses are entirely confidential.*

**Q1.** How reasonable is management's current estimate of bad debt expense?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Not Reasonable at all</b>						<b>Extremely Reasonable</b>

**Q2.** Would you force management to accept the intern's proposed adjustment? (Circle yes or no).

**Yes**                      **No**

**Q3.** To what extent do you believe that the estimates adopted by the client are "good faith" best efforts to give a true and fair representation of net income and financial performance?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Not at all</b>						<b>Very much so</b>

**Q4.** To what extent do you believe that the estimates adopted by the client were motivated by the desire to improve net income artificially?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Not at all</b>						<b>Very much so</b>

**Q5.** At this point you have the option to obtain more evidence before making a final decision regarding management's estimate of bad debt expense. Would you like to obtain 1 piece of additional evidence? (Circle yes or no)

**Yes**                      **No**

- If you answered "**NO**" to the question above you are done with the first part of the case, skip the remaining questions in this section and answer the questions labeled "PART 2."
- If you answered "**YES**" to the question above, open envelope #1 at this time. Remember that choosing to open this envelope will cost you additional time to complete the task and will also cost you **two** of the tickets that you have for the cash drawing. But, only those with the correct answer can participate in the drawing.

**Q6.** At this point you have the option to obtain more evidence before making a final decision regarding management’s estimate of bad debt expense. Would you like to obtain a second piece of additional evidence? (Circle yes or no)

**Yes**                      **No**

- If you answered “**NO**” to the question above you are done with the first part of the case, skip the remainder of this section and answer the questions labeled “PART 2.”
- If you answered “**YES**” to the question above, open envelope #2 now. Remember that choosing to open this envelope will cost you additional time to complete the task and will also cost you **three** of the tickets that you have for the cash drawing. But, only those with the correct answer can participate in the drawing.

**Q7.** At this point you have the option to obtain more evidence before making a final decision regarding management’s estimate of bad debt expense. Would you like to obtain a third piece of additional evidence? (Circle yes or no)

**Yes**                      **No**

- If you answered “**NO**” to the question above you are done with the first part of the case, please place this paper in your packet and take out the sheet labeled “PART 2.”
- If you answered “**YES**” to the question above, open envelope #3 now. Remember that choosing to open this envelope will cost you additional time to complete the task and will also cost you **four** of the tickets that you have for the cash drawing. But, only those with the correct answer can participate in the drawing.
- After reading this final piece of evidence, you will be done with the first part of the case. Please answer the questions labeled “PART 2.”





**Questions 12 through 16 on** the scales below, please state how much you agree with the following questions. A response of 1 indicates complete agreement, while a response of 7 means that you do not agree at all.

**Q12.** What is your perception regarding the amount of time that you had to complete this case?

1	2	3	4	5	6	7
Not much time					Plenty of time	

**Q13.** During the case, did you feel that you might not have enough time to answer all of the questions?

1	2	3	4	5	6	7
Did not have time					I had plenty of time	

**Questions 14 through 16**

At the beginning of the exercise, a brainstorming session was described, where professional skepticism was discussed. Questions 14-16 relate to that particular discussion.

*Mark and “X” on the line below somewhere between 1 and 100, to indicate how much you agree with the following two statements.*

**Q14.** After reading this case, I am aware of several negative consequences that can result from **NOT** behaving professionally skeptical.

---

0-----20-----40-----60-----80-----100
Fully Disagree <span style="float: right;">Fully Agree</span>

**Q15.** When I think about professional skepticism, I think more about the consequences of **not** behaving professionally skeptical than I think about the benefits of behaving professionally skeptical.

---

1-----20-----40-----60-----80-----100
Fully Disagree <span style="float: right;">Fully Agree</span>

**Q16.** What is your opinion about how professional skepticism was described to you? Specifically, do you feel that professional skepticism was discussed in a positive or negative manner?

1	2	3	4	5	6	7
Extremely negative	fairly negative	only slightly negative	neutral	slightly positive	fairly positive	extremely positive

**Q17.** How would you describe your mood today, ranging from extremely sad to extremely happy?

1-----2-----3-----4-----5-----6-----7  
Extremely sad Extremely happy

**Please answer the following questions as accurately as possible.**

**Q18.** Overall, I tended to question the statements that I read from Phil, the controller.

1-----2-----3-----4-----5-----6-----7  
I don't agree at all Fully Agree

**Q19.** While working on this case, I frequently questioned things that I saw or read.

1-----2-----3-----4-----5-----6-----7  
I don't agree at all Fully Agree

**Q20.** While working on this case, I had a tendency to reject statements unless I had proof that they were true.

1-----2-----3-----4-----5-----6-----7  
I don't agree at all Fully Agree

**Q21.** While working on this case, I took my time when making decisions.

1-----2-----3-----4-----5-----6-----7  
I don't agree at all Fully Agree

**Q22.** During this experiment, I did not like deciding until I had a chance to look at all of the available information.

1-----2-----3-----4-----5-----6-----7  
I don't agree at all Fully Agree

**Q23.** I did not like having to make decisions quickly while working on this case.

1-----2-----3-----4-----5-----6-----7  
I don't agree Fully Agree  
at all

**Q24.** While working on this case, I tried to ensure that I had considered most available information before making a decision.

1-----2-----3-----4-----5-----6-----7  
I don't agree Fully Agree  
at all

**Q25.** While completing this case, I waited to make decisions until I could get more information.

1-----2-----3-----4-----5-----6-----7  
I don't agree Fully Agree  
at all

**Q26.** I felt that opening evidence envelopes would give me a better chance to arrive at the correct answer to the case.

1-----2-----3-----4-----5-----6-----7  
I don't agree Fully Agree  
at all

**Q27.** I tended to search for more evidence in order to improve my chances of getting the correct answer to the case.

1-----2-----3-----4-----5-----6-----7  
I don't agree Fully Agree  
at all

**Q28.** I actively sought out all of the information that I could while completing this case.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q29.** I used all resources available to me to get all of the information that I could, in the case.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q30.** During the case, I felt rushed to complete it as quickly as possible.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q31.** During the case, I looked at less information than I might have, because of the time pressure that I felt.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q32.** During the case, I may have rushed my judgments a little in order to finish in the time allotted.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Demographics**

**Q33 -** What is your Gender? (Please circle)

Male            Female

**Q.34 -** What is your age? \_\_\_\_\_

**Q.35** – How many years of work experience do you have? (Meaning, any paid job that you have had) \_\_\_\_\_

**Q.36** – How many years of accounting work experience do you have? (For example, time on internships or any other accounting-related work) \_\_\_\_\_

*For the questions below, please indicate the extent to which you agree with each statement.*

**Q.37** – The skill of reasonable risk-taking is one important skill that an auditor can have.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q.38** - To achieve something in life, one must take risks

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

**Q.39** - I willingly take on new responsibilities and new projects in my school courses.

1-----2-----3-----4-----5-----6-----7

I don't agree  
at all

Fully Agree

***This concludes the survey. Thanks for your participation!***

APPENDIX B

HURTT (2010) PROFESSIONAL SKEPTICISM SCALE

Instructions: Statements that people use to describe themselves are given below. Please circle 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
I often accept other people's explanations without further thought.	1 6	2	3	4	5
I feel good about myself.	1 6	2	3	4	5
I wait to decide on issues until I can get more information.	1 6	2	3	4	5
The prospect of learning excites me.	1 6	2	3	4	5
I am interested in what causes people to behave the way that they do.	1 6	2	3	4	5
I am confident of my abilities.	1 6	2	3	4	5
I often reject statements unless I have proof that they are true.	1 6	2	3	4	5
Discovering new information is fun.	1 6	2	3	4	5
I take my time when making decisions.	1 6	2	3	4	5
I tend to immediately accept what other people tell me.	1 6	2	3	4	5
Other people's behavior does not interest me.	1 6	2	3	4	5
I am self-assured.	1 6	2	3	4	5
My friends tell me that I usually question things that I see or hear.	1 6	2	3	4	5
I like to understand the reason for other people's behavior.	1 6	2	3	4	5
I think that learning is exciting.	1 6	2	3	4	5
I usually accept things I see, read, or hear at face value.	1 6	2	3	4	5
I do not feel sure of myself.	1 6	2	3	4	5
I usually notice inconsistencies in explanations.	1 6	2	3	4	5
Most often I agree with what the others in my group think.	1 6	2	3	4	5
I dislike having to make decisions quickly.	1 6	2	3	4	5



	6				
I have confidence in myself.	1 6	2	3	4	5
I do not like to decide until I've looked at all of the readily available information.	1 6	2	3	4	5
I like searching for knowledge.	1 6	2	3	4	5
I frequently question things that I see or hear.	1 6	2	3	4	5
It is easy for other people to convince me.	1 6	2	3	4	5
I seldom consider why people behave in a certain way.	1 6	2	3	4	5
I like to ensure that I've considered most available information before making a decision.	1 6	2	3	4	5
I enjoy trying to determine if what I read or hear is true.	1 6	2	3	4	5
I relish learning.	1 6	2	3	4	5
The actions people take and the reasons for those actions are fascinating.	1 6	2	3	4	5

APPENDIX C  
INFORMATION CONTAINED IN EVIDENCE ENVELOPES

Evidence Pieces

1 – Envelope #1. Standard Industry reports provide information about the manufacturing industry in which the company operates. The 2010 report provides the following information related to the percentages used to calculate bad debt expense estimates:

- The industry range for the % of sales used by companies in the year 2010 is:

(1.4% to 3.5%)

2 – Envelope #2. Information about ratios and industry averages

		prior year	current year
Selected Ratios:	<u>2008</u>	<u>2009</u>	<u>2010</u>
Accounts receivable turnover	9.2	9.3	<b>6.3</b>
# of days sales in accounts receivable	40	39	<b>58</b>

Based on published reports, the industry range for A/R Turnover is:

(7.5 to 10)

Based on published reports, the industry range for # of days' sales is:

(30 to 55)

3 – Envelope #3. An interview with the new credit manager reveals the following information about customer accounts:

A new credit manager was hired at the end of 2009. He is highly motivated to perform well because his salary is based on the number of new customer accounts that are opened (meaning that the more customer accounts, the higher his commission). The credit manager made drastic changes to the 2010 credit policies to allow customers with poor credit to qualify for accounts

with Associated Industries. The new changes are far less strict than credit policies in prior years, but the manager thinks that his new policies will help to attract new customers.

## REFERENCES

- Alderman, C. W., and J. W. Deitrick. 1982. Auditors' perceptions of time budget pressures and premature sign-offs: A replication and extension. *Auditing* (1): 54.
- Allport, G. W. (1966). Religious context of prejudice. *Journal for the Scientific Study of Religion* (5):447-457.
- American Institute of Certified Public Accountants (AICPA). 2002. Consideration of Fraud in a Financial Statement Audit. Statement on Auditing Standards No. 99. New York, NY: AICPA.
- Asare, S. K., A. M. Wright, and G. M. Trompeter. 2000. The effect of accountability and time budgets on auditors' testing strategies. *Contemporary Accounting Research* 17 (4): 539-560.
- Ashton, R. and S. S. Kramer. 1980. Students as surrogates in behavioral accounting research: Some evidence. *Journal of Accounting Research* 18 (1): 1-15.
- Bamber, E. M., L. S. Bamber and J. H. Bylinski. 1988. A descriptive study of audit managers' working paper review. *Auditing: A Journal of Practice and Theory* (7) Spring: 137-149.
- Banks, S. M., P. Salovey, S. Greener, A. J. Rothman, A. Moyer, J. Beauvais and E. Epel. 1995. The effects of message framing on mammography utilization. *Health Psychology* (14): 178-184.
- Baron, R. M., and D. A. Kenny. 1986. The moderator-mediator distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* (51): 1173-1182.
- Beasley, M. S., J. V. Carcello, and D. R. Hermanson. 2001. Top 10 audit deficiencies. *Journal of Accountancy* 191 (4): 63-66.
- Beeler, J. D., and J. E. Hunton. 2002. Contingent economic rents: Insidious threats to audit independence. *Advances in Accounting Behavioral Research* (5): 3-17.
- Block, L. G. and P. A. Keller. 1995. When to accentuate the negative: The effects of perceived efficacy and message framing on intentions to perform a health-related behavior. *Journal of Marketing Research*: 192-203.
- Bonner, S. E. 2007. Judgment and Decision Making in Accounting. Upper Saddle River, NJ: Pearson Prentice Hall.
- Brewer, M. B. and R. M. Kramer. 1986. Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology* (50): 543-549.
- Buss, A. 1989. Personality as Traits. *American Psychologist* (44): 1378-1388.

- Choo, F. 1995. Auditors' judgment performance under stress: A test of the predicted relationship by three theoretical models. *Journal of Accounting, Auditing & Finance* 10 (3):611-641.
- Choo, F. 1986. Job Stress, Job Performance, and Auditor Personality Characteristics. *Auditing: A Journal of Practice & Theory* 5 (Spring): 17-34.
- Church, T. A. 2000. Culture and personality: Toward an integrated cultural trait psychology. *Journal of Personality* 68(4): 651-704.
- Coram, P., J. Ng, and D. R. Woodliff. 2004. The effect of risk of misstatement on the propensity to commit reduced audit quality acts under time budget pressure. *Auditing* 23 (2): 159-167.
- Cook, E. and T. Kelley. 1988. Auditor stress and time-budgets. *The CPA Journal* (July): 83-86.
- Costa, P. T., Jr., and R. McCrae. 1992. Revised NEO Personality Inventory and NEO Five-Factor Inventory professional manual. Odessa, FL: Psychological Assessment Resources.
- Curtis, M.B. and Payne, E.A. 2008. An examination of contextual factors and individual characteristics affecting technology implementation decisions in auditing. *International Journal of Accounting Information Systems*, 9 (2): 104-121.
- Curtis, M.B. and Taylor, E. 2009. Whistleblowing in public accounting: The influence of identity disclosure, situational context and personal characteristics. *Accounting and the Public Interest*. Sarasota (9): 191.
- Davis-Blake, A. and J. Pfeffer. 1989. Just a mirage: The search for dispositional effects in Orga. Academy of Management. *The Academy of Management Review* 14(3): 385.
- DeZoort, F. T. 1998. Time pressure research in auditing: Implications for practice. *The Auditor's Report* 22 (1): 11-14.
- DeZoort, F. T., and T. L. Alan. 1997. A review and synthesis of pressure effects research in accounting. *Journal of Accounting Literature* 16:28.
- Digman, J. M. 1990. Personality structure: Emergence of the five-factor model. *Annual Review of Psychology* 41 (1): 417.
- Doty, J. 2011. Global Dimension Conference on Audit Policy. Keynote Address.
- Epstein, S. and O'Brien, E. J. 1985. The person-situation debate in historical and current perspectives. *Psychological Bulletin* (98): 513-537.
- Friestad, M. and Wright, P. 1994. The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research* (2): 1-31.
- Fullerton, R. R., and C. Durtschi. 2005. The effect of professional skepticism on the fraud detection skills of internal auditors. Working Paper, Utah State University.

- Ganzach, Y. and N. Karsahi. 1995. Message framing and buying behavior: A field experiment. *Journal of Business Research* (32): 11–17.
- George, J. M. 1991. State or trait: effects of positive mood on prosocial behaviors at work. *Journal of Applied Psychology* 76 (2): 299-307.
- . 1992. The role of personality in organizational life: issues and evidence. *Journal of Management* 18 (2): 185.
- Gian, C., and A. W. David. 2007. A cross cultural comparison of the importance of leadership traits for effective low-level and high-level leaders: Australia and China. *International Journal of Cross Cultural Management: CCM* 7 (1): 47.
- Glover, S. M. 1997. The influence of time pressure and accountability on auditors' processing of nondiagnostic information. *Journal of Accounting Research* 35 (2): 213-226.
- Glover, S., Prawitt, D. and Spilker, B., 1997. The influence of decision aids on user behavior: Implications for knowledge acquisition and inappropriate reliance. *Organizational Behavior and Human Decision Processes* (72): 232–255.
- Grambling, A. A. 1999. External auditors' reliance on work performed by internal auditors: The influence of fee pressure on this reliance decision. *Auditing* 18 (supplement): 117-135.
- Hackenbrack, K. 1992. Implications of seemingly irrelevant evidence in audit judgment. *Journal of Accounting Research* 30 (Spring): 126-136.
- Hackenbrack, K and M. W. Nelson. 1996. Auditors' incentives and their application of financial accounting standards. *The Accounting Review* 71 (January): 43-59.
- Haynes, S. G., and M. Feinleib. 1980. Women, work and coronary heart disease: Prospective findings from the Framingham Heart Study. *American Journal of Public Health* 70 (2):133.
- Heyi, S., M. Na, and G. Dan. 2007. The study on relationship between the traits of leaders and the performance of the leaders under different organizational cultures. *Canadian Social Science* 3 (1): 39.
- Homer, P. M. and S.-G. Yoon. 1992. Message framing and the interrelationships among ad-based feelings, affect, and cognition. *Journal of Advertising* (21): 19–32.
- Houston, R. W. 1999. The Effects of Fee Pressure and Client Risk on Audit Seniors' Time Budget Decisions. *Auditing* 18 (Fall): 70-86.
- Hurt, R. K. 2010. Development of a Scale to Measure Professional Skepticism. *Auditing* 29 (1):149-171.
- Hurt, R. K., M. Eining, and D. Plumlee. 2008. Measuring professional skepticism to provide a link to skeptical behaviors. Working paper. Baylor University.

- Jamal, K., P. Johnson, and R. Berryman. 1995. Detecting framing effects in financial statements. *Contemporary Accounting Research* 12(1): 85-105.
- Johnson, J. A. 1999. Persons in situations: distinguishing new wine from old wine in new bottles. *European Journal of Personality* 13 (5): 443-453.
- Jones, J., Massey, D., and Thorne, L. (2003). Auditors' ethical reasoning: Insights from past research and implications for the future. *Journal of Accounting Literature* (22): 45-103.
- Kahneman, D., and A. Tversky. 1979. Prospect Theory: An analysis of decision under risk. *Econometrica* 47 (2): 263-291.
- Kaplan, S., and P.M.J. Reckers. 1995. Auditors' reporting decisions for accounting estimates: The effect of assessments of the risk of fraudulent financial reporting. *Managerial Auditing Journal* 10 (5): 27-36.
- Kelley, T., and L. Margheim. 1990. The impact of time budget pressure, personality, and leadership variables on dysfunctional auditor behavior. *Auditing* 9 (2): 21-42.
- Kelley, T., L. Margheim, and D. Pattison. 1999. Survey on the differential effects of time deadline pressure versus time budget pressure. *Journal of Applied Business Research* 15 (4): 117.
- Kennedy, J. 1995. Debiasing the curse of knowledge in audit judgment. *The Accounting Review Sarasota* 70 (2): 249.
- Klersey, George F. 1994. Identification of auditors' propositions related to assessments of management estimates. *Behavioral Research in Accounting* (6): 43.
- Kluemper, D. H., L. M. Little, and T. DeGroot. 2009. State or trait: effects of state optimism on job-related outcomes. *Journal of Organizational Behavior* 30 (2): 209-231.
- Krishnamurthy, P., and A. Nagpal. 2008. The impact of goal framing on the choose-reject discrepancy. *Advances in Consumer Research - North American Conference Proceedings* (35): 784-785.
- \_\_\_\_\_, P. Carter, and E. Blair. 2001. Attribute framing and goal framing effects in health decisions. *Organizational Behavior and Human Decision Processes* 85(2): 382-399.
- Kuhberger, A. 1995. The framing of decisions: A new look at old problems. *Organizational Behavior and Human Decision Processes* 62 (2): 230-240.
- LeBoeuf, R. A., and E. Shafir. 2003. Deep thoughts and shallow frames; on the susceptibility to framing effects. *Journal of Behavioral Decision Making* 16 (2): 77-92.
- Levin, I. P., G. J. Gaeth, J. Schreiber, and M. Lauriola. 2002. A new look at framing effects: distribution of effect sizes, individual differences, and independence of types of effects. *Organizational Behavior & Human Decision Processes* 88 (1): 411.



- Levin, I. P., S. L. Schneider, and G. J. Gaeth. 1998. All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior & Human Decision Processes* 76 (2): 149-188.
- Libby, R. and J. Luft. 1993. Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society* 18(5): 425.
- Lipe, M. 1993. Analyzing the variance investigation decision: The effects of outcomes, mental accounting, and framing. *The Accounting Review* 68 (4): 748-764.
- Louwers, T. J., E. Henry, B. J. Reed, and E. A. Gordon. 2008. Deficiencies in auditing related-party transactions: Insights from AAERs. *Current Issues in Auditing* 2 (2): A10-A16.
- MacDonald, A. P. 1970. Internal-External locus of control and attitude toward disability. Working paper.
- MacKinnon, D. 2008. Introduction to Statistical Mediation Analysis, New York: Erlbaum and Taylor Francis Group.
- Malone, C. F., and R. W. Roberts. 1996. Factors associated with the incidence of reduced audit quality behaviors. *Auditing* 15 (2): 49-64.
- Margheim, L., and K. Pany. 1986. Quality control, premature signoff, and underreporting of time: Some empirical findings. *Auditing* 5 (2): 50.
- Mautz, R. K., and H. A. Sharaf. 1961. The Philosophy of Auditing. Sarasota, FL, American Accounting Association, Monograph #6.
- McCrae, R. R., and P. T., Costa Jr. 1990. Personality in Adulthood. New York: Guilford.
- \_\_\_\_\_. 1996. Toward a New Generation of Personality Theories: Theoretical Contexts for the five-factor Model. In J.S. Wiggins (Ed.), *The Five-Factor Model of Personality: Theoretical Perspectives*: 51-87. New York: Guilford.
- McDaniel, L. S. 1990. The effects of time pressure and audit program structure on audit performance. *Journal of Accounting Research* 28 (2): 267-285.
- McMillan, J. J. and R. A. White. 1993. Auditors' belief revisions and evidence search: The effect of hypothesis frame, confirmation and professional skepticism. *The Accounting Review* 68 (3): 443-465.
- Meyerowitz, B. E., and S. Chaiken. 1987. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality and Social Psychology* 52 (3): 500-510.
- Mischel, W. 1968. Personality and assessment. New York: Wiley.

- Moeckel, C. 1990. The effect of experience on auditors' memory errors. *Journal of Accounting Research* 28 (2): 368-387.
- \_\_\_\_\_, and R. D. Plumlee. 1989. Auditors' confidence in recognition of audit evidence. *The Accounting Review* 64 (4): 653-666.
- Mueller, J.M. and Anderson, J.C. 2002. Decision aids for generating analytical review alternatives: The impact of goal framing and audit-risk level. *Behavioral Research in Accounting* 14: 157-177.
- Nesselrode, J. R. 1988. Some implications of the trait-state distinction for the study of development over the life span: The case of personality. Edited by D. L. F. In P.B. Baltes, and R. M. Lerner (Eds.). Hillsdale, NJ: Erlbaum.
- Murphy, D.S., 1990. Expert system use and the development of expertise in auditing: a preliminary investigation. *Journal of Information Systems* (4): 18–35.
- Nelson, M. 2009. A model and literature review of professional skepticism in auditing. *Auditing* 28 (2): 1-34.
- Newberry, K. J. P. M. J. Reckers and R. W. Wyndelts. 1993. An examination of tax practitioner decisions: The role of preparer sanctions and framing effects associated with client condition. *Journal of Economic Psychology* (14): 439–452.
- Nunnally, J. 1978. *Psychometric Theory*, Second Edition. New York, NY: McGraw-Hill.
- O'Keefe, D. J. and J. D. Jensen. 2006. The relative persuasiveness of gain-framed and loss-framed messages for encouraging disease detection behaviors: A meta-analytic review. *Journal of Communication* 59(2): 296-316.
- Otley, D. T., and B. J. Pierce. 1996. The operation of control systems in large audit firms. *Auditing* 15 (2): 65-84.
- Public Company Accounting Oversight Board \_PCAOB\_. (2008). Report on the PCAOB's 2004, 2005, 2006, and 2007 Inspections of Domestic Annually Inspected Firms. PCAOB Release No. 2008-008. Available at [http://www.pcaob.org/Inspections/Other/2008/1205\\_Release\\_2008-008.pdf](http://www.pcaob.org/Inspections/Other/2008/1205_Release_2008-008.pdf).
- Payne, E., A., and R. Ramsay, J. (2005). Fraud risk assessments and auditors' professional skepticism. *Managerial Auditing Journal* 20 (3): 321-330.
- Peterson, C. 2000. The future of optimism. *American Psychologist* (55): 44-55.
- Quadackers, L. 2007. The relationship between auditors' skeptical disposition and planning judgments in an analytical procedures task. Working paper, Vrije Universiteit, Amsterdam.

- Rhode, J. G. 1978. *The Independent Auditor's Work Environment: A survey*. The Commission on Auditors' Responsibilities Research Study No. 4. New York, NY: AICPA.
- Reese, J, S. Schneider, T. Hnath, and H. Abrams. 1997, The influence of message framing and treatment approach on hearing aid uptake in elderly hearing-impaired veterans. Presented at the annual meeting of the Society for Judgment and Decision Making, November, Philadelphia, PA.
- Rest, J. 1986. *Moral Development: Advances in research and theory*. New York: Praeger Press.
- Robberson, M. R. and R. W. Rogers. 1988. Beyond fear appeals: Negative and positive persuasive appeals to health and self-esteem. *Journal of Applied Social Psychology* 18: 277-287.
- Robie, C., D. Brown, and P. Bly. 2008. Relationship between major personality traits and managerial performance: Moderating effects of derailing traits. *International Journal of Management* 25 (1): 131.
- Rothman, A. J., and P. Salovey. 1997. Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin* 121 (1): 3-19.
- Salovey, P., and P. Williams-Piehota. 2004. Field experiments in social psychology: Message framing and the promotion of health protective behaviors. *American Behavioral Scientist* 47 (5): 488-505.
- Sanford, N. 1963. Personality: It's Place in Psychology. In S. Koch (Ed), *Psychology: A study of science* (5): 488-592. New York, McGraw Hill.
- Shafir, E. 1993. Choosing versus Rejecting: Why some options are better and worse than others. *Memory and Cognition* (21): 546-556.
- Shapeero, M., H. C. Koh, and L. Killough, N. 2003. Underreporting and premature sign-off in public accounting. *Managerial Auditing Journal* 18 (6/7): 478.
- Shaub, M.K. 1996. Trust and Suspicion: The effects of situational and dispositional factors on auditors' trust of clients. *Behavioral Research in Accounting* (8): 154-174.
- Shaub, M.K., and J.E. Lawrence. 1996. Ethics, experience, and professional skepticism: A situational analysis. *Behavioral Research in Accounting* (Supplement): 124-157.
- Shrout, P.E. and N. Bolger. 2002. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods* 7(4): 422-445.
- Solomon, I. and Brown, C. E. 1992. Auditors' judgments and decisions under time pressure: An illustration and agenda for research. Deloitte and Touche/University of Kansas Symposium on Auditing Problems.

- Staw, B. M., Bell, N. E., & Clausen, J. A. 1986. The dispositional approach to job attitudes: A lifetime longitudinal test. *Administrative Science Quarterly* (31): 56-77.
- Steyer, R., M. Schmitt, and M. Eid. 1999. Latent state trait theory and research in personality and individual differences. *European Journal of Personality* 13 (5): 389-408.
- Stoner, S. A. 2010. Goal framing of health related behaviors: What factors contribute to the persuasiveness of a message? Dissertation Abstracts International: Section B: The Sciences and Engineering, ProQuest Information & Learning, US.
- Sutton, S. G., and Byington J.R. An analysis of ethical and epistemological issues in the development and implementation of audit expert systems. *Advances in Public Interest Accounting* (5): 234-43.
- Taylor, S. E. 1991. Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin* 110 (July): 67-85.
- Trompeter, G. 1994. The effect of partner compensation schemes and Generally Accepted Accounting Principles on audit partner judgment. *Auditing: A Journal of Practice & Theory* (13): 56-71.
- Tsui, J. S. L., and F. A. Gul. 1996. Auditors' behavior In an audit conflict situation: A research note on the role of locus of control and ethical reasoning. *Accounting, Organizations & Society* 21 (1): 41-51.
- Tversky, A., and D. Kahneman. 1981. The framing of decisions and the psychology of choice. *Science* 211 (4481): 453-458.
- . 1986. Rational Choice and the Framing of Decisions. *Journal of Business* 59 (4): S251-S278.
- Tversky, A., D. Kahneman, D. A. Balota, and E. J. Marsh. 2004. The Framing of Decisions and the Psychology of Choice. New York, NY US: Psychology Press.
- Veroff, J. 1983. Contextual determinants of personality. *Personality and Social Psychology Bulletin* (9): 331-343.
- Waggoner, J. B., and J. D. Cashell. 1991. The Impact of Time Pressure on Auditors' Performance. *Ohio CPA Journal* 50 (1): 27.
- Washington, R., R. , C. Sutton, D. , and H. Field. 2006. Individual differences in servant leadership: the roles of values and personality. *Leadership & Organization Development Journal* 27 (8): 700.
- Yan, C., J. P. Dillard, and F. Shen. 2010. The effects of mood, message framing, and behavioral advocacy on persuasion. *Journal of Communication* 60 (2): 344-363.