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The effect of the implicit theory of integrity on an internal auditor's assessment of management fraud risk

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THE EFFECT OF THE IMPLICIT THEORY OF INTEGRITY
ON AN INTERNAL AUDITOR'S ASSESSMENT
OF MANAGEMENT FRAUD RISK

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
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Doctor of Philosophy

in

The Accounting Department

by

Stephanie F. Watson
B.S., Louisiana State University, 1991
M.S., Louisiana State University, 1999
December 17, 2004
dedicated to
the teachers who inspire me:

Barbara Apostolou,
Jane Arthurs,
Kristy Kidd,
and Kitty Sanders.
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ABSTRACT

The purpose of this research project is to determine whether the implicit theory of integrity, a theory from the social psychology literature that predicts how social judgments and decisions are made, can explain internal auditors’ decisions. The implicit theory (Dweck and Leggett 1988) states that there are two types of people: (1) entity theorists and (2) incremental theorists. Entity theorists form strong inferences from observed behavior that are used to predict future behavior. Incremental theorists, on the other hand, do not infer characteristics from behavior, and therefore, do not attempt to predict future behavior. In an internal auditing context, the implicit theory is applicable to an internal auditor’s assessment of management’s integrity. A quasi-experiment was used to assess the main effect of integrity cues (three levels of integrity between subjects) on an internal auditors’ assessed risk of management fraud based on a hypothetical case. The auditors’ implicit theory of integrity (interacted with the integrity cue) is also investigated. These tests offer some evidence in support of the main effect of the integrity cue on the fraud risk assessment, but no evidence is found in support of the interaction effect of the implicit theory.
1. INTRODUCTION

The purpose of the research project is to determine whether a personal conviction of an internal auditor, specifically his/her implicit theory of integrity, can explain differences between judgments and decisions of internal auditors. “Judgments and decisions are made under uncertainty about the relationship between cues and events” (Libby 1981, 4). The implicit theory (Dweck and Leggett 1988) is a theory from the social psychology literature that describes why different people (i.e., observers) construe different relationships between observed cues and events related to the behavior of those observed. The implicit theory states that there are two types of people categorized by how an individual’s underlying beliefs influence judgments: (1) entity theorists and (2) incremental theorists.

When considering a specific personal characteristic (e.g., intelligence, morality), entity theorists form strong inferences from observed behavior that is used to predict future behavior. An entity theorist believes the specific personal characteristic varies between people, but within a given person remains constant. For example, John holds an entity theory of integrity; that is, he believes that while one person may exhibit more or less integrity than another, an individual’s integrity is constant and does not change over time. Therefore, if John observes someone exhibiting low integrity, John will believe that person to be of low integrity, and will use that belief to predict that the person will act similarly in the future.

When considering the same personal characteristic, an incremental theorist does not form inferences and, therefore, will not make predictions about future behavior. An incremental theorist believes that the specific personal characteristic varies both between
people and within people. Using the same example, Jane holds an incremental theory of integrity; that is, she believes that the level of integrity displayed in a person’s actions is malleable and may change. Therefore, if Jane observes the same behavior observed by John, Jane will not form a belief about integrity of the observed person and will not attempt to predict how that person will act in the future.

Several hypotheses have been tested by researchers to determine how this implicit theory affects the judgments and decisions of people. McConnell (2001) studies how people form social impressions (like or dislike) based on observed behavior of people. McConnell’s conclusion is that entity theorists weight the cues they receive earlier more heavily than those received later, but incremental theorists do not. Therefore, entity theorists formed social impressions based on early observations. Gervey, Chiu, Hong, and Dweck (1999) investigated the impact of character-related traits on decision making as a function of implicit theory when determining guilt or innocence of a murder suspect. Entity theorists were more likely to use cues about the defendant’s respectability in determining guilt or innocence. When respectability was low (high), a higher (lower) percentage of entity theorists concluded guilt than when respectability was high (low); incremental theorists were equally likely to conclude guilt regardless of respectability.

While McConnell (2001) demonstrated that the implicit theory has an impact on the social judgments people form, Gervey et al. (1999) offers evidence that people will use those judgment in a decision. In an internal auditing context, it is a common practice to assess the integrity of clients. That assessment is a potential factor in judgments and decisions about the strength of the control environment, the system of internal controls,
and the risk of errors and fraud. This project is concerned with internal auditors’ judgments of fraud risk.

Cressey (1953) developed the fraud triangle (see Figure 1), which indicates that three elements (motive, perceived opportunity, and a propensity to rationalize) must be present for fraud to occur. Motive and opportunities are characteristics of the environment, which have been studied by many researchers. For example, Apostolou, Hassell, and Webber (2000) used professionals to classify risk factors as to motive or opportunity. Also, Church, McMillan, and Schneider (1998, 2001a, 2001b) conducted a between-subjects experiment to determine whether the presence of fraud risk factors affected internal auditors’ consideration of fraudulent financial reporting.

However, only two fraud studies have investigated the third point of Cressey’s (1953) triangle, the propensity to rationalize, which is a characteristic of the perpetrator(s) of fraud. According to Cressey (1950), the propensity to rationalize is a moral weakness and a hidden variable. Though hidden, auditors do make an assessment of this hidden variable when assessing the integrity of management (AICPA 1996, 2002). Loebbecke, Eining, and Willingham (1989) asked auditors with fraud experience to classify fraud indicators as to their ability to identify opportunity, motive, and attitude (of the perpetrator) to commit fraud. Beaulieu (2001) investigated the effect of management’s integrity on audit risk, procedures, and fees.

The first question this research project addresses is whether auditors will use (i.e., give weight to) integrity cues in their assessment of management fraud risk (a main effect). Solomon and Shields (1995) examine twenty years of research in auditing judgment and decision-making processes, and they identified 21 studies that employ cue
Figure 1. The fraud triangle

Adapted from Cressey (1953)

usage as a research method for policy capturing. These studies generally found the cues significant in their research model, and the cues were “found to be consistent with professional auditing standards” (Solomon and Shield 1995, 152). As of December 2002, a new Statement on Auditing Standard related to considering fraud in an audit guides the auditor to “identify events or conditions that indicate incentives/pressures to perpetrate fraud, opportunities to carry out the fraud, or attitudes/rationalizations to justify a fraudulent action” (AICPA 2002, ¶31). These three distinguished categories correspond to the Cressey’s (1953) fraud triangle (see Figure 1) and are listed in the standard’s appendix which contains examples of risk factors separated into the same three categories. Following the guidance of this standard, auditors should be seeking and
giving weight to information about “inappropriate values or ethical standards” (AICPA 2002, ¶A.2) of their clients.

In addition to the main effect of the integrity cue on the auditors’ assessment of fraud risk, this study will also investigate whether the weight given to those cues is modulated by the implicit theory of integrity held by the auditor (an interaction effect). The implicit theory literature (e.g., McConnell 2001 and Gervey et al. 1999) suggests that the implicit theory has such an effect on social judgments and that those judgments have been used to affect decisions. The implicit theory is being added to this research model to determine if it holds in an auditing setting.

As suggested by Gervey et al. (1999), the implicit theory also has an effect on the types of additional information requested, with entity theorists requesting more personal information (i.e., a further investigation of the cues received) than incremental theorists request. This study investigates whether the auditors’ implicit theory of integrity affects the type of additional information sought by the auditor during the planning process of the audit.

To investigate these research questions, a quasi-experiment was conducted. The research instrument (which is described in detail in Chapter 3) contains three main sections: (1) assessment of the subjects’ implicit theory of integrity using methods from prior research (e.g., McConnell 2001, Gervey et al. 1999), (2) presentation of a hypothetical narrative case followed by some audit planning tasks, and (3) collection of the subjects’ demographic information. The narrative case, in the form of an audit planning memorandum, presents the three elements of Cressey’s (1953) triangle: a motive to commit fraud, an opportunity to commit fraud, and a cue about the integrity of
the client. While the motive and opportunity are not manipulated in this case, there is a three-level manipulation of the integrity cue with only one level presented to each subject.

After reading the narrative, the subjects, internal auditors, were asked to make judgments about the likelihood of possible causes for a change in an analytic described in the case narrative. In this between-subjects design, the main effect of the integrity cue was investigated. Some evidence was found in support of client integrity affecting the auditors’ assessment of management fraud risk.

In addition, each auditor’s implicit theory of integrity was included as an interaction variable to determine whether it has a moderating effect on the auditor’s assessed risk of fraud, but no evidence was found to support such an effect. The implicit theory of integrity was also not found to have an affect on the types of additional information requested by the subjects. The findings of this study are in contrast to the evidence in support of an effect of the implicit theory on decisions in other literature (e.g., Gervey et al. 1999).

The remainder of this paper is organized in the following chapters. Chapter 2 is a review of literature related to the implicit theory and management fraud. Chapter 3 describes the development of the research hypotheses tested and the development of the research instrument used to collect data. The tests of the hypotheses are described in Chapter 4, while the research conclusions and limitations are presented in Chapter 5.
2. LITERATURE REVIEW

This research project investigates how internal auditors use cues about the integrity of management in their assessment of the risk of management fraud. In addition, this study is designed to determine whether that assessment is affected by the internal auditors’ implicit theory of integrity (an interaction with the integrity cue). In this chapter, literature related to the implicit theory and auditor assessment of fraud is reviewed.

2.1. The Implicit Theory

Dweck and Leggett (1988) developed a generalizable implicit theory model that accounts for behavior patterns and the underlying motivations and goals of those behaviors. This model development began by examining behavior in children faced with learning (a task that improves knowledge) and performance (a task that proves existing knowledge). All children, when faced with a learning goal, showed persistence even when challenged. When faced with performance goals, children with low perceived self-intelligence avoided challenge and sought tasks at their comfort level; children with high perceived self-intelligence persisted with challenges.

When given the opportunity to select a task (learning or performance), children who believed that their intelligence was fixed (whether high or low) sought performance tasks, while children who believed they had a potential to increase their intelligence sought learning goals. As a result, Dweck and Leggett (1988) developed a specific model, the implicit theory of [self] intelligence, which states that people can be categorized into two groups with respect to beliefs about self-intelligence: (1) entity theorists who believe...
their intelligence is fixed and seek only to prove what they already know; and (2) incremental theorists who believe their intelligence is malleable and seek to improve it.

In the second part of their paper, Dweck and Leggett (1988) modified the implicit theory model to generalize it beyond self-intelligence and beyond the self entirely. The general implicit theory model defines the same two types of people: (1) entity theorists and (2) incremental theorists. Entity theorists look at a personal characteristic (e.g., intelligence, morality) and believe the trait is fixed in people; that is, different people may have different levels (e.g., high morality, low morality), but within a specific person, the level does not change over time. Because of that belief, entity theorists form impressions about people based on observed behavior and will predict future behavior to be similar; in general, entity theorists adapt judgment goals characterized as being evaluative, rigid, and difficult to change.

Incremental theorists look at the same personal characteristic and believe it to be malleable within each person. Therefore, incremental theorists do not judge or predict future behavior; instead they adapt development goals characterized by empathy and persistence toward change. Dweck and Leggett (1988) state that whether a person is an entity or incremental theorist depends on the personal characteristic under consideration. For example, a person may be an entity theorist of morality, believing a person will act with the same observed level of morality in the future, but also be an incremental theorist of intelligence, believing people have the capacity to improve their intelligence.

This generalized theory has been employed by researchers in different contexts, many of which have used the theory to explain how one person perceives another. It is in this context that the implicit theory is applicable to internal auditing because a key
function of evaluating a system of internal controls is assessing the integrity of management. Two studies that test how the implicit theory affects perceptions of others are discussed below.

McConnell (2001) performed an experiment to investigate the relationship between the implicit theory and social judgments. The implicit theory of 50 undergraduate psychology students was determined by asking their level of agreement with three statements about a person’s likelihood to change. Next, the subjects were presented with 36 observed behaviors (24 for a fictional person, Jim, and 12 for a fictional person, Bob; one-third of the behaviors were undesirable for each), the subjects (1) recalled as many behaviors of Jim and Bob as they could, (2) recalled the proportion of undesirable behavior given about each Jim and Bob, and (3) assessed the likeability of Jim and Bob. Entity theorists in this study were more likely than incremental theorists to recall more behaviors in general and more from the beginning of the list (on which their impressions were theoretically formed) than the end. Incremental theorist evaluated Jim more favorably because of the increased frequency of the statements about him as evidenced by assessing Jim as more likeable and attributing a greater proportion of undesirable behaviors to Bob. McConnell’s study shows that entity theorists weight the cues they receive earlier more heavily than those received later, but incremental theorists do not. However, in this research project, only one cue was given, not a series as in McConnell.

Gervey, Chiu, Hong, and Dweck (1999) investigated the impact of character-related traits on decision making as a function of implicit theory in a legal setting. The transcript from a fictitious murder trial was given to 268 subjects (undergraduate
students) in three similar studies, who were asked to decide on a verdict of guilt or innocence of the defendant. Two experimental variables were manipulated in the transcript: (1) defendant’s respectability as indicated by clothing and reading preferences and (2) strength of the evidence against the defendant as indicated by the corroborating testimony (or lack thereof) by two prosecution witnesses. In the analysis, entity theorists\(^1\) were more likely to use the defendant’s respectability in determining guilt or innocence. That is, when respectability was low (high), a higher (lower) percentage of entity theorists concluded guilt than when respectability was high (low); incremental theorists were equally likely to conclude guilt regardless of respectability. Gervey et al. concluded that "the implicit theories of moral character can set up a framework for making decisions about others" (Gervey et al. 1999, 27). The findings of Gervey et al. (1999) demonstrate how subjects react differently to one cue about respectability based on their implicit theory.

McConnell (2001) demonstrated that the implicit theory has an impact on the social judgments people form, and Gervey et al. (1999) offers evidence that people will use those judgment in a decision. Applying the implicit theory to an internal auditor’s assessment of management’s integrity may explain how internal auditors make very different judgments about managements’ propensity to rationalize fraud and, consequently, the auditor’s assessment of management fraud risk.

### 2.2. Fraud Literature

Cressey (1953) developed the fraud triangle (see Figure 1), which indicates that three elements (motive, perceived opportunity, and a propensity to rationalize) must be
present for fraud to occur. Therefore, the risk that fraud is present is a function of the
three elements:

$$\text{Actual Fraud Risk} = f\left[ \text{motive} + \text{percieved opportunity} + \text{propensity to rationalize} \right].$$

(1)

Motive and opportunities are characteristics of the environment while the propensity to
rationalize is a characteristic of the perpetrator(s) of fraud. According to Cressey (1950),
the propensity to rationalize is a moral weakness and a hidden variable. Though hidden,
auditors do make an assessment of this hidden variable when assessing the integrity of
management (AICPA 1996, 2002). A presentation of accounting literature related to
auditing and fraud is presented below.

2.2.1. Professional Standards Related to Management Fraud

Fraudulent financial reporting has been the concern of the Securities and
Exchange Commission (SEC) and professional accounting organizations since the mid-
1980s. As a result, the Committee of Sponsoring Organizations (COSO) was formed to
sponsor The National Commission on Fraudulent Financial Reporting, or the Treadway
Commission (named after its chairman). In October 1987, the Treadway Commission
issued a Report (Treadway 1987) describing its extensive review of actual fraud cases. In
its Report, the Commission noted that management fraud usually occurs when an
incentive and an opportunity coexist. To detect management fraud, an auditor must be
aware of the influence of these incentives and opportunities. The Report also includes a
nonexhaustive list of fraud risk factors (each classified as an incentive or opportunity)
that can alert an auditor that fraud may exist.

Shortly after the formation of COSO, the IIA produced Statement on Internal
Auditing Standards (SIAS) No. 3, entitled Deterrence, Detection, Investigation, and
Reporting of Fraud (IIA 1985). SIAS No. 3 addresses the necessary ability of internal auditors to detect indicators of fraud when present. When such indicators are identified, the Standard guides the internal auditor to perform additional audit procedures and to report findings of fraud to the appropriate level of management.

In response to the Treadway Commission Report, the AICPA issued SAS No. 53, entitled The Auditor's Responsibility to Detect and Report Errors and Irregularities (AICPA 1988a). SAS No. 53 specified that "[t]he auditor should assess the risk that errors and irregularities may cause the financial statement to contain a material misstatement. Based on that assessment, the auditor should design the audit to provide reasonable assurance of detecting errors and irregularities that are material to the financial statements" (AICPA 1988a, ¶.05). Prior to SAS No. 53, detection of irregularities (now known as fraud) was not differentiated from detection of any material error. Implementation of SAS No. 53 did not change the auditor's responsibility with respect to detecting material irregularities; however, the auditor became responsible for assessing the risk of material errors and irregularities, considering specific risk factors listed in the Statement, and preparing an audit plan accordingly.

In December 1997, SAS No. 82, entitled Consideration of Fraud in a Financial Statement Audit (AICPA 1997), was issued to supersede SAS No. 53 (AICPA 1988a) by clarifying the auditor’s detection and reporting responsibility by requiring that the auditor make a separate assessment of the possibility of fraud. When considering management fraud, SAS No. 82 requires auditors to consider 25 risk factors included in the text of the standard.
In December 2002, a new Statement on Auditing Standard, numbered 99, was issued. The new statement, entitled *Consideration of Fraud in a Financial Statement Audit* (AICPA 2002), supersedes SAS No. 82 (AICPA 1997). The new standard increases the auditor’s responsibility with regard to fraud audit procedures including extensive documentation of the audit team’s discussions of fraud, identified fraud risks, fraud-related audit procedures and results, and communications about fraud and risks with the client and others. Notably, the new standard directs the auditor to “identify events or conditions that indicate incentives/pressures to perpetrate fraud, opportunities to carry out the fraud, or attitudes/rationalizations to justify a fraudulent action” (AICPA 2002, ¶31). These three distinguished categories correspond to the Cressey’s (1953) fraud triangle (see Figure 1). Additionally, an appendix to the new standard contains examples of risk factors separated into the same three categories. In that appendix, the standard offers the following guidance to the auditor in identifying risk factors related to attitudes/rationalizations in management fraud risk:

Risk factors reflective of attitudes/rationalizations by board members, management, or employees, that allow them to engage in and/or justify fraudulent financial reporting, may not be susceptible to observation by the auditor. Nevertheless, the auditor who becomes aware of the existence of such information should consider it in identifying the risks of material misstatement arising from fraudulent financial reporting (AICPA 2002, ¶A.2).

Among those risk factor examples identified, “communication of inappropriate values or ethical standards” (AICPA 2002, ¶A.2) is listed. SAS No. 99 is guiding auditors to look at evidence of the values of the client, which is the subject of this research project.

2.2.2. Academic Research Related to Management Fraud

Auditors make an assessment or judgment about the likelihood of management fraud. Academic research related to the judgment or decision-making process has been
conducted in many disciplines including studies about the judgment of auditors in a management fraud setting. This section contains a review of these studies organized by the decision-making framework provided by Libby and Lewis (1977).

Libby and Lewis (1997) describe decision making as a system of inputs (how information gets to the decision maker), processes (how the decision maker forms a judgment using personal characteristics and decision rules), and outputs (the quality of the judgment and the self-insight of the decision maker). Assuming the inputs would be the same for any auditor in a specific fraud assessment task, it is the process that is of importance when considering what leads to auditors making different assessments. According to Libby and Lewis, the process is influenced by two main factors: (1) the decision rule, the objective method used by the decision maker to complete the decision process, and (2) personal characteristics of the decision maker.

2.2.2.1. Process Decision Rules and Inputs

In accounting research, particularly in research related to management fraud, studies have concentrated on cue usage in a linear form (regression) to determine the significance and weight of manipulated experimental variables, most of which are inputs (i.e., different circumstances). These experiments manipulate objective variables between subjects so the researchers can make a determination of how auditors’ decisions differ when circumstances are different.

Since SAS No. 53 (AICPA 1988a) and SAS No. 82 (AICPA 1997) were implemented, academic researchers have been examining the use and effectiveness of the fraud risk factors. Nieschwietz, Schultz, and Zimbelman (2000) give an extensive review of the body of fraud literature between 1981 and 2000. The review consists of over 30
fraud studies that investigated the validity and weighting of predictors of fraud, auditors’ unaided and mechanically aided fraud risk assessments, and how fraud detection influences audit plans. A general consensus of many of the studies in this review is that models (e.g., logit, expert system) developed in fraud research have outperformed the unaided auditor in detecting fraud, suggesting that audit firms should consider a modeling approach to fraud assessment. Nieschwietz, Schultz, and Zimbleman suggest that the outperformance can be attributed to the complexity of the risk assessment task because “humans have difficulty achieving high accuracy when making complex decisions” (Nieschwietz, Schultz, and Zimbelman 2000, 238).

Zimbleman (1997) examines the SAS No. 82 (AICPA 1997) requirement for auditors to separately assess management fraud risk and how it affects auditors’ attention to risk factors, planned audit hours, and types of audit tests planned. Two versions of a case were prepared with financial statements and narratives that presented either high- or low-risk fraud risk factors. Using software, the 108 subjects were shown one version of the narrative and were asked to do one of the following: (1) make one holistic assessment of risk; (2) make a separate assessment of risk of error, then risk of fraud; or (3) make a separate assessment of risk of fraud, then risk of error. Zimbleman found that auditors who had to make separate fraud- and error- risk assessments spent more time reading the fraud risk factors (cues) and budgeted more hours for both the high- and low-risk cases (i.e., there was no in hours difference between the high- and low-risk cases). Also, no effect was found regarding the type of audit tests planned.

Glover, Prawitt, Schultz, and Zimbleman (2003), a study conducted after SAS No. 82 (AICPA 1997) was issued and implemented, replicated Zimbleman (1997), which was
conducted prior to the issuance of SAS No. 82, to determine if Zimbleman captured the full effect of the issuance of SAS No. 82. By comparing the pre-82 responses to the post-82 responses, Glover et al. found that auditors with the high-risk case were more likely to increase the extent of audit tests than those with the low-risk case. Again, there was no evidence that auditors modify the type of the planned tests. Zimbleman demonstrates that as professional standards have become more directive about the specific responsibilities of auditors related to the investigation of fraud, auditors pay more attention to the cues that would point to fraud. Glover et al. further shows that the increased requirements and auditor attention have led to a change in how the audits are planned.

Apostolou, Hassell, Webber, and Sumners (2001) conducted a study that examined the decision rule or cue weighting used by auditors to evaluate the 25 risk factors identified in SAS No. 82 (AICPA 1997). A survey, which was sent to 140 auditors (internal and external), consisted of 52 pairwise comparisons between the risk factors. The respondents rated one factor more important than the other or of equal importance. The Analytic Hierarchy Process (AHP) was used to calculate a weight for each of the 25 factors revealing that the six factors categorized by SAS No. 82 as management characteristics accounted for 58.2% of the importance while industry conditions accounted for 14.4%, and operating and financial stability characteristics accounted for 27.4%.

There is no guidance in SAS No. 82 (AICPA 1997) as to whether the presented risk factors indicate motive, opportunity, and/or rationalization. To provide this guidance, Apostolou, Hassell, and Webber (2000) surveyed 35 auditors thought to be experts in financial statement fraud because of their experience. The subjects, who were provided
by four of the Big 5 accounting firms in conjunction with support from the American Institute of Certified Public Accountants, were given the 25 factors in random order and were asked to classify the factors as motive or opportunity (or unsure). They were not asked to classify a factor as rationalization because rationalization is a measure of the ethics of a person committing fraud according to Apostolou, Hassell, and Webber. The result of the survey was a classification of 13 risk factors as motivation, 11 as opportunity, with one not receiving a majority. Nineteen of the classifications were significant in a chi-square tests. All of the industry condition factors were classified as motive; all but one of the management characteristics factors was classified as opportunity. The operating and financial stability characteristics were split. The only factor receiving a unanimous classification was significant compensation tied to aggressive accounting practices, which was classified as a motivating factor.

Bedard and Graham (2002) investigated whether the orientation (positive or negative) of decision aids used during an audit has an effect on how the auditors assess risk and plan the audit. There were 46 auditors participating in this study, making 23 pairs of auditors. Each pair came from the same firm and had worked on the same engagement. Each auditor was given an audit planning task on a client with which they were familiar, and pairs planned for the same client. Within each pair, one auditor received a negatively-worded decision aid (e.g., “function reveals a number of weaknesses” (Bedard and Graham 2002, 45)), and one received a positively-worded decision aid (e.g., “function is appropriately organized” (Bedard and Graham 2002, 45)). Using regression analysis, Bedard and Graham found that when using a negative decision
aid, auditors identified more risk factors and that the planning of substantive tests is more
directly tied to the risks identified.

Church, McMillan, and Schneider (1998) study the effects of inherent risk, control risk, and decision frame (structure of the auditing task) on how an internal auditor considers fraud. Their $2 \times 2 \times 2$ design manipulated three variables in a hypothetical case given to 167 internal auditors: (1) inherent risk was high or low; (2) control risk was high or low; and (3) after a description of an unexpected increase in receivables, the auditing task was manipulated as either to investigate whether accounts receivable was fairly stated or materially misstated (decision frame). After reading the case, the subjects were given a list of 18 possible explanations for the unexpected fluctuation in receivables; three categories of explanations (six explanations each) were represented: (1) fraud, (2) error, (3) environmental. The subjects were asked to select six explanations from the list of 18 to investigate further in completion of their task. Analysis of the responses indicated that whether an internal auditor chose to pursue the fraudulent explanations was significantly affected by the levels of inherent risk and control risk, but not by decision frame.

In a similar study, Church, McMillan, and Schneider (2001a, 2001b) conducted a $2 \times 2 \times 2$ between-subjects experiment to determine what factors affected internal auditors’ consideration of fraudulent financial reporting. The 127 internal auditors in this experiment were given background on a company including one of eight scenarios involving analytical procedures, which were defined by permutations of (1) positive or negative unexpected income, (2) presence or absence of an income-based bonus plan, and (3) restrictive or nonrestrictive debt covenants. The respondents were asked to list up to
six explanations for the unexpected difference in income and to categorize each explanation as probably caused by economic factors, unintentional error, or fraud. Church, McMillan, and Schneider found that internal auditors were more likely to conclude (list as an explanation) fraud when unexpected income was positive; this effect was more pronounced when debt covenants were restrictive. No association was found regarding income-based bonuses. Church, McMillan, and Schneider also investigated association between conclusion of fraud and experience (tenure, both as an internal and an external auditor), but no association was found. Church, McMillan, and Schneider (1988, 2001a, 2001b) establish that auditors are more likely to conclude fraud when cues point toward motive and opportunity. However, these studies did not investigate the effect of client integrity on the likelihood to conclude fraud.

Beaulieu (2001) investigated the effect of management’s integrity on the four variables: (1) assessment of business risk, (2) assessment of combined risk, (3) extent of audit evidence recommended, and (4) audit fees recommended. Sixty-three Canadian audit partners read a narrative regarding a potential audit client in which integrity of management was manipulated by including (or not including) cues such as “the executive is not respected in the local business community” (Beaulieu 2001, 92). The response variables were measured on an 11-point scale where 10 (zero) indicated the variable would be much higher (lower) than that of a normal firm in the same industry. Using path analysis, Beaulieu concluded that integrity is inversely related to business risk and combined risk directly, and inversely related indirectly (through risk) to recommendations for audit evidence and audit fees. The studies discussed in this section
demonstrate examinations of inputs and/or decision rules used by auditors when making audit decisions related to fraud.

2.2.2.2. Personal Characteristics of the Decision Maker (Auditor)

Many behavioral accounting studies have examined the personal characteristics of decision makers. Some recent studies concerning how personal characteristics of auditors affect audit judgments are briefly discussed. Church, McMillan, and Schneider (2001a, 2001b) investigate the association between concluding fraud and auditor experience (tenure), both as an internal and an external auditor, but no association was found.

Beirstaker and Wright (2001) tested whether practical problem solving ability affects how an audit task is completed. Subjects (66 auditors and 78 students) were asked to solve two real-world problems (finding a mechanic and assessing the correctness of tax deductions) and two auditing tasks (evaluation a system of internal controls and performance analytical procedures). The results indicated that subjects with high practical problem solving ability (assessed by the degree to which the problem was identified and a complete solution described) were better able to complete the auditing tasks.

Abdolmohammadi and Owhoso (2000) investigate the effect of ethical cues and experience on auditors’ assessment of fraud risk. The subjects (80 audit managers and 80 audit seniors) were given the research materials, which consisted of a set of accounts and a loan receivable containing errors. Half of the subjects received materials that also included a positive-ethics cue indicating that the company is taking risks related to the betterment of the community’s social and economic goals. In this 2×2 research design (2 levels of experience; ethics cue or none), subjects were assigned randomly to one of the four cells. After reading the materials, the subjects assessed the likelihood of fraud risk
on a scale of one to 100. Using ANOVA, Abdolmohammadi and Owhoso found the following: (1) the presence of the ethical cue significantly decreased the fraud risk assessment by audit seniors (less experience), but not the fraud risk assessment by audit managers (more experience), and (2) fraud risk assessment by audit seniors is significantly lower than that of the audit manager when the ethics cue was present, but there was no significant difference when no ethics cue was present. In a related study, Owhoso (2002) used the same data presented by Abdolmohammadi and Owhoso to investigate the effect of auditors’ gender (interacted with the experience and the presence of a positive ethics cue) on the auditors’ assessment of fraud risk, but no gender effect was detected.

Chung and Monroe (2001) test the selectivity hypothesis in an auditing context. The selectivity hypothesis states that females are more likely to consider all cues in high-complexity tasks and, therefore, make more accurate judgments as opposed to males who are more likely to consider only some of the cues. Participants (100 males and 58 females) were asked to decide whether the balance in inventory was fairly presented based on a hypothetical narrative. Task complexity was considered high or low depending on the number of cues included in the narrative. The results supported the hypothesis by revealing a significant interaction between gender and task-complexity (low or high depending on the number of cues regarding the account balance of inventory in a narrative), the direction of which indicated that females made slightly more accurate judgments in high-complexity tasks.
2.2.3. Expanding the Management Fraud Literature

To expand professional literature, this research project will consider the auditor’s assessment of management’s integrity with respect to management fraud risk. When assessing fraud risk, the auditor must make a judgment about the existence of all three elements of Cressey’s (1953) triangle, but many academic studies have focused on motive and opportunity (e.g., Apostolou, Hassell, and Webber 2000) used professionals to classify risk factors as to motive or opportunity), and few academic studies have considered the third point integrity (e.g., Loebbecke, Eining, and Willingham (1989) classified risk factors as to motive, opportunity, and attitude6).

When an auditor considers the likelihood of fraud, s/he cannot know for certain whether the three elements actually existed in concert. Therefore, the likelihood of fraud is not observable, so the auditor’s assessment or judgment of fraud risk is a function of the auditor’s assessment of the three elements:

$$\text{Auditor’s Assessment of Fraud Risk} = f\left[ \text{Assessed motives} + \text{Assessed opportunities} + \text{Assessed propensity to rationalize} \right]$$

where assessed propensity to rationalize is the auditor’s assessment of the integrity of management. Therefore, the process, as described by Libby and Lewis (1977), of how an auditor assesses the risk of fraud is an interaction between (1) the cues an auditor receives and (2) the auditor’s assessment of those cues. Because two auditors may make different assessments of the same cues, the fraud literature should benefit from understanding which personal characteristics affect auditor judgment.

Prior literature, as reviewed in Nieschwietz, Schultz, and Zimbleman (2000), compared the known risk of fraud from actual cases to the auditor’s assessment of the risk of fraud, but has not considered how the auditor affects that assessment. This
proposed research will test the interaction between the (1) implicit theory of integrity held by an individual internal auditor with (2) the integrity cue given about the client to determine whether that interaction has significant effects on that auditor’s assessment of management fraud risk. Auditors will vary in their implicit theory of integrity (entity or incremental), and the integrity cues\(^7\) will be manipulated in the research instrument (three levels of integrity) resulting in a 2×3 design.

2.3. End Notes

1 The method of determining a subject’s implicit theory is similar to the method used by McConnell (2001).

2 COSO is a joint venture of the American Institute of Certified Public Accountants (AICPA), the American Accounting Association (AAA), the Financial Executives Institute (FEI), and Institute of Internal Auditors (IIA), and the National Association of Accountants (NAA) (COSO 2001).

3 In the subsequent standard, SAS No. 82 (AICPA 1997), the word “irregularity” was replaced with “fraud.”

4 SAS No. 82 (AICPA 1997) discusses both management fraud (financial statement fraud) and employee fraud (misappropriation of assets or defalcation). Though both are of importance in an audit setting, this study addresses management fraud only. Therefore, throughout the remainder of this proposal, the word “fraud” refers to management fraud.

5 The auditors slightly outperformed the models in the nonfraud cases.

6 Lobbecke, Eining, and Willingham (1989) present the formula \(P(MI) = f(C,M,A)\), which indicates that the probability of material irregularities (MI) is a function of (c) conditions or opportunities, (m) motives, and (A) attitude or ethical values of the perpetrator.

7 To limit the potential for confounded variables, the motive to commit fraud and the opportunity to commit fraud will be held constant in this study; therefore, their effects cannot be measured. This study is limited to an investigation of the third point of the fraud triangle and how auditors’ assessments of this point may vary.
3. RESEARCH METHOD

The purpose of this study is to examine how the auditor’s determination of fraud risk differs due to personal characteristics. Specifically, does an auditor’s implicit theory of integrity effect his/her assessment of fraud risk?

3.1. Hypothesis Development

During the planning and risk assessment phase of an audit, auditors consider many elements, including the internal control system and results of analytical procedures. As a function of understanding the internal control system, auditors must evaluate the control environment, which “defines the tone of an organization and the way it operates” and “foster[s] integrity and control consciousness” (Steinberg 1993). The control environment is also known as “soft controls” and includes management’s philosophy, integrity, and ethics. Auditing these soft controls is growing in importance because a lack of these types of controls “increases the possibility that other, more traditional controls, such as approvals and reconciliations, may be overridden” (Hubbard 2002).

Internal auditors gather evidence about soft controls in their organization through interviews and questionnaires. Therefore, this evidence is based on the auditor’s impressions formed about the reliability, truthfulness, and integrity of people, not transactions (i.e., subjective, not objective). Standards also explicitly require that these soft controls be evaluated. SAS No. 78, entitled Consideration of Internal Control in a Financial Statement Audit: An Amendment to Statement on Auditing Standards No 55,\(^8\) instructs auditors to consider such factors as the “integrity and ethical values,” “commitment to competence,” and “management’s philosophy and operating style” (AICPA 1996). In addition, SAS No. 99, entitled Consideration of Fraud in a Financial
Statement Audit, directs auditors to consider “attitudes/rationalizations to justify fraudulent action” (AICPA 2003, ¶31). The assessment of soft controls such as integrity of management is difficult to quantify, but an auditor’s assessment of soft controls is likely to impact the assessment of other risks that are often quantified (e.g., control risk, fraud risk).

H1(alt): When assessing the risk of management fraud, internal auditors will assess the risk of fraud higher, the lower the client’s integrity.

Assessing integrity is not an objective procedure, but a subjective impression formed by interacting with the client’s management and witnessing their behavior. The impression formed is affected both by the actions of management and the auditor’s beliefs about human nature. In other words, two different auditors, after the same encounter with management, may form different impressions. The implicit theory (Dweck and Leggett 1988) demonstrates how impression formation is different between two different classifications of people: (1) entity theorists and (2) incremental theorists. In the extreme, entity theorists believe a personal characteristic is fixed (unchanging) in an individual and expect similar future behavior from that individual; incremental theorists believe the characteristic is malleable and do not form expectations about future behavior.

When assessing the control environment, internal auditors who hold an entity theory of integrity may be more likely than incremental theorists to form lasting impressions of management that they will use to predict or anticipate other actions by management. Applying this theory, it is predicted that when assessing the risk of fraud, entity theorists will rely more on the integrity cues of management than incremental theorists.
**H2_{(alt)}:** When assessing the risk of management fraud, internal auditors who demonstrate an entity theory of integrity will weight the moral inferences of the client’s integrity more heavily than those who demonstrate an incremental theory of integrity.

Auditors use many pieces of information when assessing the risk of fraud and completing other tasks during the planning process. As questions arise in an auditor’s mind, additional information relevant to making decisions can be obtained. Applying the implicit theory of integrity, entity theorists are more likely than incremental theorists to request additional information related to the character of management.

**H3_{(alt)}:** Internal auditors who demonstrate an entity theory of integrity will be more likely than those who demonstrate an incremental theory of integrity to request character-related information about management.

Table 1 summarizes the three hypotheses in both the alternative and null forms.

### 3.2. Required Subjects

This research examines the effect of two independent variables and their interaction on an internal auditor’s assessment of management fraud risk: (1) integrity cues of management (high, medium, and low) and (2) the internal auditor’s implicit theory of integrity (entity versus incremental). The level of management’s integrity will be manipulated between subjects in an audit-scenario narrative, yielding three version of the research instrument. Each subject will receive one version of the narrative upon which to base answers, and responses will be compared between subjects. In addition, subjects will demonstrate their implicit theory of integrity as either entity or incremental. Therefore, this between-subjects, quasi-experiment has a $3 \times 2$ design resulting in six cells.

The power of a study is influenced by the sample size. When conducting an analysis of variance between cells (which is done later in this study), power is assessed by the number of observations per cell. Bratcher, Moran and Zimmer (1970) developed
Table 1. Research hypotheses

<table>
<thead>
<tr>
<th>Alternative Hypotheses</th>
<th>Null Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 When assessing the risk of management fraud, internal auditors will assess the</td>
<td>Client’s integrity will not affect an internal auditor’s assessment of the risk</td>
</tr>
<tr>
<td>risk of fraud higher, the lower the client’s integrity.</td>
<td>of management fraud.</td>
</tr>
<tr>
<td>H2 When assessing the risk of management fraud, internal auditors who demonstrate</td>
<td>The implicit theory of integrity demonstrated by an internal auditor will</td>
</tr>
<tr>
<td>an entity theory of integrity will weight the moral inferences of the client’s</td>
<td>not affect how that auditor weights the client’s integrity cues when assessing</td>
</tr>
<tr>
<td>integrity more heavily than those who demonstrate an incremental theory of</td>
<td>the risk of management fraud.</td>
</tr>
<tr>
<td>integrity.</td>
<td></td>
</tr>
<tr>
<td>H3 Internal auditors who demonstrate an entity theory of integrity will be more</td>
<td>The implicit theory of integrity demonstrated by an internal auditor will</td>
</tr>
<tr>
<td>likely than those who demonstrate an incremental theory of integrity to request</td>
<td>not affect the type of additional information requested about management.</td>
</tr>
<tr>
<td>character-related information about management.</td>
<td></td>
</tr>
</tbody>
</table>

Tables for selecting the minimum sample size per cell needed to achieve a certain level of power. To use the tables, the following four inputs must be set or estimated:

1. $\alpha$, alpha-risk or the risk of incorrect rejection (of the null);
2. $\beta$, beta-risk or the risk of incorrect acceptance, where power is $1 - \beta$;
3. $r$, the number of cells in the analysis of variance; and
4. $\Delta/\sigma$, the ratio of the absolute value of the difference between the maximum and minimum cell means to the pooled standard deviation, where $\Delta$ is set to define the smallest effect the test is designed to detect.

Alpha was set at the traditional of 0.05, beta set at 0.20 (for a power of 0.80), and $r$ for this study is six cells. Using the standard deviation from preliminary data, the ratio of $\Delta$ to $\sigma$ was approximately 1.25, which requires a sample size of at least 18 observations per cell to achieve a power of .80.
By randomizing the three versions of the instrument, the subjects are randomly assigned into one of three cells defined by the integrity of management. However, implicit theory of integrity is a personal trait of the subject over which there is no experimental control. Therefore, data collection should continue until the minimum number of observations in the six cells is 18, which could significantly influence the sample size.9

3.3. The Research Instrument and Variable Definitions

The internal auditors in this experiment were given the research instrument, which contained all instructions and forms necessary to participate in this experiment. The research instrument, which was available in paper and electronic format, contained three sections in which the subjects (1) answered questions to depict their personal implicit theory of integrity, (2) read a narrative about a company and their charge as an internal auditor at that company and completed fraud risk assessment tasks, and (3) provided demographic information. See Appendix A for one complete version of the research instrument. The tasks in the first two sections and the narrative are described in detail below, followed by a description of the randomization techniques used on the research instruments.

3.3.1. Measuring Implicit Theory

To determine a subject’s implicit theory (whether they are entity or incremental theorists), prior research has used multiple statements to which the subject indicated their agreement or disagreement using a Likert-type scale (as seen in Gervay et al. 1999; Levy, Stroessner and Dweck 1998; and Chiu, Dweck, Tong, and Fu 1997). These three statements are listed in generic form below:
1. A person’s _____ is something very basic about him/her, and it cannot be changed much.

2. Whether a person is _____ or not is deeply ingrained in his/her personality; it cannot be changed much.

3. There is not much that can be done to change a person’s _____.

The word or phrase that should fill the blanks depends on what implicit theory a researcher is testing. For example, if a researcher wanted to determine a subject’s implicit theory of intelligence, the first statements would read, “A person’s intelligence is something very basic about him/her, and it cannot be changed much.”

The subjects of this research project are internal auditors, who as professionals maintain their own integrity and who also assess the integrity of others. Therefore, the subject’s implicit theory of integrity is determined in this study. Incorporating the AICPA’s and IIA’s definition of integrity, the three statements that were used to determine each subject’s implicit theory of integrity are listed below:

1. A person’s ___integrity___ is something very basic about him/her, and it cannot be changed much.

2. Whether a person is ___honest and candid___ or not is deeply ingrained in his/her personality and cannot be changed much.

3. There is not much that can be done to change a person’s ___integrity traits such as whether s/he is self-serving or law-abiding or has integrity, honesty, or diligence___.

Subjects were asked in Task 1 to agree or disagree with these statements on a six-point Likert-type scale (strongly disagree to strongly agree). Prior studies (e.g., McConnell 2001; Gervey et al. 1999; Chiu et al. 1997) have embedded the three statements in a
series of similar questions so that the three statements of interest were obviously the focus of the research, thus avoiding pretest effects. In this experiment, these three statements were randomly included with seven other statements\textsuperscript{13} answered on the same scale.

3.3.1.1. Implicit Theory Variables

To calculate a score for a subject’s implicit theory, each subject’s responses to the three statements of interest were averaged.\textsuperscript{14} This average score were used as an independent variable in two ways for each subject (as seen in Gervey et al. 1999). First, implicit theory was measured as a dichotomous, nominal variable. Subjects with an average score above 3.5 were considered to be entity theorists, their average score indicating that they agree with the three statements (integrity is pretty constant in a person). Subjects with an average score below 3.5 were considered to be incremental theorists, their average score indicating that they disagree with the three statements (integrity is a malleable trait in a person). This dichotomous variable (referred to as IT1) was used in statistical tests to represent the subjects’ implicit theory and was coded as one for entity theorists and zero for incremental theorists.

It is conceivable that the first measurement (dichotomous) does not completely capture a subject’s implicit theory. For example, an entity theorist with an average score of six (strongly agree) may make stronger moral inferences than an entity theorist with an average score of four (somewhat agree). For that reason, the average implicit theory score also was used as a continuous, ordinal measure (referred to as IT2). IT2 was constructed using the average response of the three statements.
3.3.2. Narrative Presentation

The second part of the research instrument includes a narrative for the subjects to read. The narrative establishes an internal auditing planning scenario for Chess Cab, a fictitious taxicab company, which is a division of a company called TransportNation, Inc. The narrative includes an excerpt from the audit-planning memo, which focuses attention to a change in analytics—a downward trend in taxicab maintenance costs relative to revenues. There was one experimental manipulation in the narrative: the integrity of Chess Cab’s Director, named Conaway, who stands to earn a bonus related to this maintenance-cost-to-sales ratio, will be depicted as either high, medium, or low. This manipulation results in three versions of the narrative presented to the subjects.

In each of the three versions, Conaway has been asked to resign from the fund-raising committee of a children’s home. Descriptions of the manipulation of integrity are presented in Table 2. The entire narrative is presented in the research instrument shown in Appendix A, and the narrative text versions are presented in Appendix B.

3.3.2.1. Integrity Variables

The variable CUE was used as an independent variable to account for the integrity cue given in each respondent’s version of the research instrument. This is a nominal variable coded one for high, zero for medium, and negative one (–1) for low.

3.3.3. Assessments of the Risk of Fraud

After reading the narrative, auditors assessed the risk of fraud as an explanatory factor for the change in maintenance costs in two tasks: (1) feasibility of fraud and (2) the likelihood of fraud. Both tasks are discussed in detail below.
Table 2. Integrity manipulations

<table>
<thead>
<tr>
<th>CUE</th>
<th>Integrity manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Conaway is asked to resign because Conaway missed or was late to fund-raising meetings and because Conaway intentionally misled contributors to boost contributions.</td>
</tr>
<tr>
<td>Medium</td>
<td>Conaway is asked to resign because Conaway missed or was late to fund-raising meetings.</td>
</tr>
<tr>
<td>High</td>
<td>Conaway is asked to resign because Conway told to truth resulting in the loss a contributor.</td>
</tr>
</tbody>
</table>

*a For exact text used in integrity manipulation, see Appendix B.*

3.3.3.1. Risk of Fraud—Feasibility

The narrative contains a graph representing a decline in maintenance expenses relative to sales. In Task 2A, subjects assessed the feasibility of seven explanations for the decline: 15

- external factors,
- internal factors from the Chess Cab division,
- internal factors by TransportNation,
- errors by the Chess Cab division,
- errors by TransportNation,
- intentional manipulation (fraud) by the Chess Cab division,
- intentional manipulation (fraud) by TransportNation.

(For the actual questions to which subjects responded, see Task 2A in Appendix A.) The subjects’ responses were made by marking one circle in a series of 51 unnumbered circles. Respondents were instructed that the farther to the right they make their mark, the more feasible they believe the factor to be.

Two measures of the dependent variable risk of fraud were taken from this task. Of the seven evaluations made during this task, two are related to fraud: one on the part
of Chess Cab (directed by Conaway) and one on the part of TransportNation. The integrity cue given is about Conaway. No cues about the integrity of any TransportNation personnel were given. The first measure of the risk of fraud (RF1) was be calculated by counting the circle marked when asked about the feasibility of intentional manipulation on the part of Chess Cab. RF1 was scaled using the following formula:

$$RF1 = \frac{x - 1}{50},$$  \hspace{1cm} (3)

where x is the circle marked counting from the left. RF1 will be between zero and one.

Because there is no information given about the integrity of the personnel of TransportNation, the assessed feasibility of fraud by TransportNation is not of interest to this study. However, the difference between the feasibility of fraud on the part of Chess Cab and on the part of TransportNation can be thought to be affected by the integrity cue given about the director of Chess Cab. Therefore, the second measure of the risk of fraud (RF2), was calculated as the difference in the circle marked for Chess and the circle marked for TransportNation, scaled between zero and one using formula (3).

3.3.3.2. Risk of Fraud—Probability

In Task 2B, subjects assessed the probability that the decrease in relative maintenance costs is due to four factors: (1) external environment, (2) internal environment, (3) unintentional error, or (4) intentional manipulation. To complete this task, subjects were asked to distribute 100 points among the four categories, which should capture the subject’s opinion about the relative probability that each of four factors was the cause of the decrease in the maintenance-cost-to-sales ratio. The third measure of the dependent variable risk of fraud (RF3) is calculated as the proportion of
points (number divided by 100) assigned to intentional manipulation and falls between zero and one.

3.3.4. Other Variables Measured

3.3.4.1. Integrity Inference Manipulation Check

To measure the strength of the actual integrity inferences made by the subjects, they were asked in Task 2C to assess the degree to which they agree that the director possesses six character traits on a six-point, Likert-type scale (strongly disagree to strongly agree). The six traits are comprised of the following: four integrity traits (self-serving, responsible, integrity, and candid) taken from the definitions of integrity in the AICPA Code of Profession Conduct (AICPA 2001) and the IIA Code of Ethics (IIA 2001); and two distracter traits related to intelligence (unintelligent and well informed).

The responses from this exercise were coded from one (strongly disagree) to six (strongly agree). The variable INFER1 is the score on the statement about integrity. The score of the four integrity traits were averaged to form the variable INFER2. Extreme scores for either inference variable represent stronger inferences.

3.3.4.2. Additional Information

The narrative provided in this experimental setting contains all the information available. However, auditors are likely to want additional information. After the auditors made determinations of the risk of fraud using the information provided, they were given the opportunity in task 2D to list up to six additional pieces of information they would like to have to prepare an audit plan. Each piece of information was coded as to whether it is related to the character of the director. The variable CINFO is the number of character information requests divided by the total number of requests to create a
continuous variable between zero and one representing the proportion of character information requested. For example, if a respondent listed five additional pieces of information and two were related to character, the CINFO variable is scored as .4 (two divided by five).

Additionally, each piece of information requested was coded as to whether it is related to the bonus the director stands to receive. The variable BINFO is the number of character information requests divided by the total number of requests to create a continuous variable between zero and one, representing the proportion of bonus information requested. All variables measured are listed in Table 3.

3.3.5. Randomizing Questions in the Research Instrument

Subjects either received a paper or electronic format of the research instrument. In every instrument, the tasks were presented in the same order:

- 10 statements (three of interest) for assessing implicit theory (Task 1),
- Seven questions (two of interest) about the feasibility of explanations for the change in analytic (Task 2A),
- Four factors (one of interest) among which 100 points are distributed (Task 2B), and
- Six statements (four of interest) about character traits (Task 2C).

However, within each set of questions, the order of questions/statements is randomized along with the version of the narrative (high, medium, or low integrity). If the subject received the electronic version of the research instrument, movement from task to task was controlled by macros that also randomized the questions. Paper versions were printed individually so that the order of questions was randomized. The purpose of these
### Table 3. Experimental variables

<table>
<thead>
<tr>
<th>Name</th>
<th>Measures</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT1</td>
<td>Implicit theory</td>
<td>A dichotomous variable coded as 1 for entity theorists and 0 for incremental theorists</td>
<td>Task 1</td>
</tr>
<tr>
<td>IT2</td>
<td>Implicit theory</td>
<td>A continuous random variable between 1 and 6 where lower (higher) values represent incremental (entity) theorists</td>
<td>Task 1</td>
</tr>
<tr>
<td>CUE</td>
<td>Integrity</td>
<td>As described in the narrative, coded as 1 for high, 0 for medium, and −1 for low integrity</td>
<td>Instrument Version</td>
</tr>
<tr>
<td><strong>Panel B: Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF1</td>
<td>Risk of fraud</td>
<td>A random variable between 0 and 1 where higher values represent higher <em>feasibility</em> of fraud as an explanatory factor for a change in analytic; ((x−1)÷50, ) where (x) is the (x)th circle of 51 marked for intentional manipulation</td>
<td>Task 2A</td>
</tr>
<tr>
<td>RF2</td>
<td>Risk of fraud</td>
<td>A random variable between 0 and 1 where higher values represent more <em>feasibility</em> that fraud was on the part of Chess Cab than TransportNation</td>
<td>Task 2A</td>
</tr>
<tr>
<td>RF3</td>
<td>Risk of fraud</td>
<td>A random variable between 0 and 1 where higher values represent a greater <em>probability</em> of fraud as an explanatory factor for change in analytic; portion of 100 points assigned to intentional manipulation</td>
<td>Task 2B</td>
</tr>
<tr>
<td>CINFO</td>
<td>Character information requested</td>
<td>A continuous random variable between 0 and 1, measured as the proportion of character-related information requested</td>
<td>Task 2D</td>
</tr>
<tr>
<td>BINFO</td>
<td>Bonus information requested</td>
<td>A continuous random variable between 0 and 1, measured as the proportion of bonus-related information requested</td>
<td>Task 2D</td>
</tr>
<tr>
<td><strong>Panel C: Manipulation Check Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFER1</td>
<td>Integrity inference</td>
<td>A continuous variable between 1 and 6, measured as the score representing the degree to which the director has integrity</td>
<td>Task 2C</td>
</tr>
<tr>
<td>INFER 2</td>
<td>Integrity characteristic inference</td>
<td>A continuous variable between 1 and 6, measured as the average of four scores representing the degree to which the director possesses four integrity traits</td>
<td>Task 2C</td>
</tr>
</tbody>
</table>
randomization techniques is to minimize or eliminate the order effects sometimes associated with questions. During the statistical analysis, tests were conducted to identify whether any order effects are present. See Appendix B for a detailed description of the variations in research instruments between subjects.

3.4. Planned Statistical Tests of Hypotheses

In general, two main variables (independent variables), (1) the internal auditor’s implicit theory (IT1 or IT2) and (2) client integrity cue (CUE), are investigated to determine their effect on the risk of fraud (dependent variable RF1, RF2, or RF3) assessed by the internal auditor. Hypothesis 1 addresses the main effect of integrity on risk of fraud. Hypothesis 2 addresses the effect of the interaction of the two independent variables on the dependent variables. (No hypothesis is made regarding the main effect of the auditor’s implicit theory on risk of fraud.)

Hypothesis 3 tests the main effect of the internal auditor’s implicit theory on two other dependent variables related to information requested by the respondent. A discussion of the models and planned hypothesis tests for this research is given below. First however, the test of the manipulation check is discussed.

3.4.1. Manipulation Check

The level of integrity of Chess Cab’s director is experimentally manipulated (see Table 2); the independent variable CUE is coded as one for high, zero for medium, and negative one (−1) for low to represent this manipulation. As a manipulation check, the respondents were asked to assess the director’s integrity. Respondent’s who received the high-integrity version of the instrument should have assessed the level of integrity higher than those who received the medium-integrity and low-integrity versions.
The respondents’ impressions of client integrity were assessed directly on the research instrument in Task 2C by responses to the statement “Chris Conaway seems to have integrity.” The respondents marked one of six circles coded one through six, representing strongly disagree to strongly agree. The value one to six is assigned to variable INFER1. In addition, three other statements related to integrity traits are also presented in Task 2C: “Chris Conaway seems responsible,” “Chris Conaway seems candid,” and “Chris Conaway seems to be self-serving.” The first two of these three statements are also assigned a value of one to six based on the same response scale. The third is scored one to six and reversed by subtracting the score from seven because self-serving is a negative trait contra to integrity. The variable INFER2 is an average of the response scores for the four integrity traits.18

To determine whether the manipulation affected the respondents’ assessments of the client’s integrity, four techniques were used. First, examining the correlation between cue (an ordinal variable) and both inference variable (INFER1 and INFER2) will determine the degree to which the manipulation and the respondents’ inferences move together. Second, a series of boxplots will depict the effect of manipulation graphically and identify variability an potential outliers within each level of the manipulation.

Third, one-way ANOVA tests using CUE as the independent (grouping) variable will identify the statistical significance of the manipulation on the respondents’ inferences (INFER1 and INFER2, in separate tests). Significance of the variable CUE will indicate that the manipulation had an effect on the respondents’ assessments of the client’s integrity; nonsignificant results will not support a successful manipulation of client’s integrity in the research instruments.
The variable CUE may be significant, but that result does not imply that a cue intended to represent high integrity causes a higher value of the variables INFER1 or INFER2. Therefore, the final examination of the manipulation was a series of two-sample t-tests were used to determine whether the following directions hold:

- \( \text{INFER1}_{	ext{CUE}=H} > \text{INFER1}_{	ext{CUE}=L} \);
- \( \text{INFER1}_{	ext{CUE}=H} > \text{INFER1}_{	ext{CUE}=M} \); and
- \( \text{INFER1}_{	ext{CUE}=M} > \text{INFER1}_{	ext{CUE}=L} \).

These tests were repeated for INFER2.

Because the manipulation of client integrity is the cornerstone of this research project, it is important that the manipulation is effective. If the manipulation is not effective, the remaining tests can be conducted using the inferred level of client integrity (INFER1 and INFER2) rather than the manipulation variable (CUE); however, interpretation of the results will be slightly different.

3.4.2. Hypothesis 1

Hypothesis 1 tests the main effect of client integrity (CUE, independent variable) on assessed risk of fraud (dependent variable). Risk of fraud is measured in three ways in the research instrument. First in task 2A, seven questions (in random order) are asked about what could have feasibly caused the change in analytic shown in the narrative. The first question of interest is the following: “How feasible is it that the decrease in maintenance expenses relative to sales was the result of fraudulent activities on the part of Chris Conaway?” Conaway is the member of management about whom the integrity cue is given. The response is made by marking one of 51 unnumbered circles where the circles farther to the right indicate more feasibility. The first measure of risk of fraud
(RF1) is scaled between zero and one using the circle number (counting from left to right) marked (see formula 3).

Second, another question in task 2A, asks “How feasible is it that the decrease in maintenance expenses relative to sales was the result of fraudulent activities on the part of Terry Alexander?” The response is made in the same way; however, no integrity cue is given about Alexander. The second measure of risk of fraud (RF2) is the difference between the response for Conaway and Alexander.

Third in task 2B, the respondents were asked to distribute 100 points between four explanatory factors to represent the likelihood that the change in analytic is a result of the factors, which are internal environment, external environment, intentional manipulation, and misstatement. The third measure of risk of fraud (RF3) is the portion of 100 points assigned to intentional manipulation (fraud).

To test hypothesis 1, four tests were conducted. First a MANOVA test was conducted to assess the effect of CUE on the matrix of the three dependent variables, RF1, RF2, and RF3. In addition, three ANOVA tests were conducted using the following model:

\[
RF_{ij} = \mu + \alpha_i + \epsilon_{ij},
\]

where \(RF_{ij}\) represents the \(j\)th observed value of one of the three risk of fraud variables (\(i\) representing the level of CUE), \(\mu\) represents the mean of all \(RF_{ij}\) responses, and \(\alpha_i\) represents the effect the the \(i\)th level of and CUE (+1 for high, 0 for medium, and –1 for low). Hypothesis 1 will be supported if CUE affects the means of the subsamples, and if as CUE increases, risk of fraud decreases. To test directionality individual t-tests will be conducted between the levels of CUE.
3.4.3. Hypothesis 2

Hypothesis 2 tests the interaction effect of the client integrity (CUE, independent variable) and the respondents’ implicit theory of integrity (IT, independent variable) on assessed risk of fraud (RF, dependent variable). Implicit theory of integrity is measured in two ways using the response to three statements about a person’s integrity (see section 3.3.1.1.). The first is a dichotomous variable coded as one for entity theorists and zero for incremental theorists. The second is a continuous variable between zero and one, where smaller values represent incremental theorists and larger values represent entity theorists.

To test Hypothesis 2, eight tests were conducted. The first four tests included a MANOVA and three ANOVA using the dichotomous measure of implicit theory (IT1). The model for these four tests is shown below:

\[ RF_{ijk} = \mu + \alpha_i + \beta_j + \alpha\beta_{ij} + \epsilon_{ijk}, \]  

where \( RF_{ijk} \) is the \( k \)th observed value of one of the three risk of fraud variables (in the \( i \)th level of CUE and the \( j \)th level of IT),\(^{21} \mu \) represents the mean of all \( RF_{ijk} \) responses, \( \alpha_i \) represents the effect the the \( i \)th level of CUE (+1 for high, 0 for medium, and –1 for low), \( \beta_j \) is the \( j \)th level of IT1 (1 for entity theorists and 0 for incremental theorists), and \( \alpha\beta_{ij} \) is the interaction of these two variables. To support the second hypothesis, the interaction effect should be significant.

The remaining four tests of hypothesis 2 include a multivariate multiple regression, followed by three multiple regressions. The model for these regressions is shown below:

\[ RF = \beta_0 + \beta_1 \text{CUE} + \beta_2 \text{IT} + \beta_3 \text{CUE} \times \text{IT} + \epsilon, \]  

where RF represents one of the three risk of fraud variables or the matrix of RF responses.
in the multivariate regression, CUE is the variable that represents the manipulated level of integrity (+1 for high, 0 for medium, and –1 for low), and IT represents one of the two implicit theory variables. By interacting the integrity cue and implicit theory variables, the value of $\beta_3$ represents how extreme the risk of fraud assessments were by entity theorists as compared to incremental theorists. Hypothesis 2 will be supported if $\beta_3 < 0$. Essentially, $\beta_3$ represents the modification of $\beta_1$ related to the respondents implicit theory.

There is no theory that supports the effect of the implicit theory on the assessed risk of fraud. Therefore no hypothesis is stated related to the main effect of implicit theory on the risk of fraud. Accordingly, no expectations are made and no statistical tests were conducted related to $\beta_2$.

3.4.4. Hypothesis 3

Hypothesis 3 tests the effect of the respondent’s implicit theory of integrity (IT, independent variable) on the type of additional information requested by the respondent. If entity theorists do rely on character-related information more heavily than other types as theorized, it is expected that entity theorists will request character-related additional information significantly more than will incremental theorists. In task 2D, the respondents were given six blank spaces to request additional information before finalizing the audit program. The type of information requested is measured in two ways. Each piece of information requested is coded as being character-related (related to Conaway, the member of management about whom the integrity cue is given) or related to the bonus Conaway will receive for the reduction in the analytic described in the narrative. CINFO is the number of character-related pieces of information requested.
divided by the total number of pieces of additional information requested. BINFO is the number of bonus-related information requested divided by the number of pieces of information requested.

To test hypothesis 3, two two-sample t-tests were performed comparing the average INFO score for entity theorists to the average INFO score of the incremental theorists, where INFO represents either CINFO or BINFO. Hypothesis 3 will be supported if $\text{INFO}_{\text{Entity}} > \text{INFO}_{\text{Incremental}}$, indicating that the entity theorists are requesting a larger portion of character- or bonus-related information.

### 3.5. End Notes

8 SAS No. 78 (AICPA 1996) modifies SAS No. 55, entitled Consideration of Internal Control in a Financial Statement Audit (AICPA 1988b). Hereafter, the two Statements will be cited together as SAS No. 78.

9 Test data (using accounting majors) indicates that entity theorists outnumber incremental theorists by a factor of two to one. Gervey, Chiu, Hong, and Dweck (1999) used psychology majors and found a more even split between entity (47%) and incremental theorists (53%). A fairly even distribution is expected because internal auditors come from a wide variety of disciplines.

10 Validation of this three-question measure of implicit theory was described in Levy, Stroessner, and Dweck (1998). The validation involved giving a large battery of questions which included each of the three questions two times: (1) as shown where agreement indicates entity theorist, and (2) written as an opposite where agreement indicates incremental theorist (e.g., “Everyone, no matter who they are, can significantly change their basic characteristic.”). Correlations between the responses was .73 indicating that agreement with the entity theory represents disagreement with an incremental theory (and the reverse).

11 The AICPA Code of Professional Conduct describes a person of integrity as one who is “honest and candid” (AICPA 2001, ¶54.02). The IIA’s Rules of Conduct describes integrity as working with “honesty, diligence, and responsibility,” law-abiding, and ethical (IIA 2001, ¶1.1.1-4).

12 A six-point scale was chosen for two reasons: (1) An even numbered scale was chosen so no middle or neutral point is available; and (2) six was chosen so that each half of the scale would have a center point toward which a respondent would gravitate first; then modify that point up or down (Leary 2001). For example, on the upper half...
of the scale, the center point, agree, can be modified to strongly agree or somewhat agree.

13 The seven distracter statements were adapted with permission from the “Locus of Control & Attribution Style Test” (Jerabek 1996) which contains 33 questions. The questions were originally responded to on a 5-point Likert-type scale with the center answer identified as “partially agree/disagree.” For the sake of consistency, a 6-point Likert-type scale will be used to respond to all statements.

14 For example, if a subject agrees (5), strongly agrees (6), and somewhat disagrees (3) with the three statements, the average would be 4.67 \((\frac{5+6+3}{3})\).

15 Church, McMillan, and Schneider (1998, 2001a, 2001b) used three factors: (1) environment, (2) error, and (3) fraud. In this study, environmental factors are separated into external (outside the company’s control) and internal (controllable through policies and procedures).

16 The score from the negative traits (self-serving and unintelligent) will be reversed to calculate an average score, because agreeing that the director is self-serving is disagreeing that the director is not self-serving. The conversion is made by subtracting the score from seven. For example, as score of strongly disagree, coded as one, will be converted to a score of six (seven minus one).

17 Some paper instruments contained the same order of questions in individual tasks. If these versions affected the responses, the effect will be found in tests for order effects.

18 Two additional statements, used as distractors, are made that are unrelated to integrity: “Chris Conaway seems to be intelligent” and “Chris Conaway seems to be well-informed.” The response scores to these statements are not used in this research project.

19 Two questions of interest are related to fraud. Five questions are distracters and are related to external environment, internal environment, and errors. The response scores to these questions are not used in this research project.

20 Distribution of 100 points between explanations was used by Church, McMillan, and Schneider (2001a and 2001b).

21 RF represents the matrix of RF responses for the MANOVA test.
4. STATISTICAL RESULTS

This chapter contains a description of data collection and the tests of the hypotheses in the following six sections: responses and demographics, manipulation check, tests of hypothesis 1, tests of hypothesis 2, tests of hypothesis 3, and tests for order effects. The remaining section contains alternate tests of hypotheses 1 and 2.

4.1. Responses and Demographics

The hypotheses in this study address how internal auditors use integrity cues when assessing the risk of management fraud. Therefore, this experiment requires subjects with experience as an internal auditor to respond to the research instrument. This section contains a description of how the research instruments were administered, the number of useable responses received (and reasons for discarding responses), as well as demographic information about the internal auditors who made up the final sample of responses.

4.1.1. Data Collection

The research instrument was administered in three ways: (1) in corporate internal auditing departments, (2) to local chapters of the Institute of Internal Auditors, and (3) to training seminars for internal auditors. First, two corporations circulated paper versions of the research instrument (see Appendix A) in their internal auditing departments. Of 108 instruments delivered to the corporations, 27 responses were received via individual postage-paid reply envelopes (response rate of 25%). Second, the paper versions of the research instrument were distributed at four seminars (training sessions) and returned via the seminar presenter yielding 70 responses.
The third method used to collect data was via local chapters of the Institute of Internal Auditors (IIA). Six chapter presidents of the IIA agreed to distribute an electronic version of the research instrument (see Appendix B). An electronic version of the research instrument created in Microsoft Excel was delivered via email to the president of the local chapters who forwarded it via email to the chapter members. Because these requests were essentially cold (i.e., the members did not agree to complete the research instrument prior to receiving it), a lottery was offered as incentive to participate\(^{22}\). The electronic instrument was designed to be downloaded, answered using mouse clicks, and saved and emailed back to the researcher. However, the email to which the instrument was attached gave the respondent the option to request a paper copy of the instrument\(^{23}\). The six local chapters had approximately 900 members, and 66 responses were received (approximate response rate of 7.33\%); 59 were electronic versions and seven were paper. A total of 163 responses were received (27+70+66).

4.1.2. Useable Responses

Twenty-nine of the 163 responses received were unusable and discarded for the following reasons. Two responses were students and reported no internal auditing experience\(^{24}\). Eight responses reported no demographic information, so their internal auditing experience could not be determined. Nineteen responses were eliminated because the respondent left blank critical, nondemographic responses that were needed for formulating a dependent or independent variable. The final sample contained 134 responses. The responses and omissions are summarized in Table 4 by the source of the response and in total.
Table 4. Useable responses

<table>
<thead>
<tr>
<th>Responses</th>
<th>Corporations</th>
<th>Seminars</th>
<th>Local IIA Chapters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omitted:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>No demographic data</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Critical data left blank</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Total Omitted</td>
<td>5</td>
<td>15</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>Useable Responses</td>
<td>22</td>
<td>55</td>
<td>57</td>
<td>134</td>
</tr>
</tbody>
</table>

4.1.3. Sample Size and Power

Using the tables provided by Bratcher, Moran and Zimmer (1970) and preliminary data, it was determined that a minimum of 18 observations was needed per cell to obtain the desired level of power (see section 3.2.). In six cells, 108 responses were needed \((18 \times 6)\). A total of 163 were collected to obtain 18 responses per cell. However, after deletion of responses that were missing critical data, one cell contained only 17 responses. The distribution of responses per cell is shown in Table 5.

4.1.4. Demographic Data

The 134 respondents in the final sample reported having an average of more than six years of auditing experience, of which more than four years are in internal auditing. They reported having a total of 83 certifications and various degrees including 36 post-baccalaureate. The demographic information collected from respondents is summarized in Table 6. Respondents reported taking an average of 17 minutes to complete the research instrument.

Table 5. Responses per cell in a 2×3 design

<table>
<thead>
<tr>
<th>Respondents’ Implicit Theory</th>
<th>CUE: Integrity of management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Incremental Theorist</td>
<td>18</td>
</tr>
<tr>
<td>Entity Theorist</td>
<td>32</td>
</tr>
<tr>
<td>Totals</td>
<td>50</td>
</tr>
</tbody>
</table>
Table 6. Demographics of respondents

<table>
<thead>
<tr>
<th>Panel A: Experience</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditing Experience (years) (^a)</td>
<td>6.37</td>
<td>4.50</td>
<td>0.08</td>
<td>35.00</td>
</tr>
<tr>
<td>Internal Auditing Experience (years)</td>
<td>4.54</td>
<td>2.50</td>
<td>0.08</td>
<td>30.00</td>
</tr>
<tr>
<td>Experience with topic (^b)</td>
<td>0.52</td>
<td>0.56</td>
<td>0.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Education</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>74</td>
<td>8</td>
</tr>
<tr>
<td>Business (nonaccounting)</td>
<td>45</td>
<td>26 (^d)</td>
</tr>
<tr>
<td>Nonbusiness</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>136</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: Certifications</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Internal Auditor</td>
<td>19</td>
</tr>
<tr>
<td>Certified Public Accountant</td>
<td>36</td>
</tr>
<tr>
<td>Certified Fraud Examiner</td>
<td>4</td>
</tr>
<tr>
<td>Certified Management Accountant</td>
<td>1</td>
</tr>
<tr>
<td>Certified Information Systems Auditor</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel D: Current job titles</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor/Internal Auditor</td>
<td>62</td>
</tr>
<tr>
<td>Senior Auditor</td>
<td>16</td>
</tr>
<tr>
<td>Systems Auditor</td>
<td>3</td>
</tr>
<tr>
<td>Audit Manager</td>
<td>11</td>
</tr>
<tr>
<td>Director (VP) of Internal Audit</td>
<td>10</td>
</tr>
<tr>
<td>Consultant</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>134</strong></td>
</tr>
</tbody>
</table>

\(^a\) Auditing experience includes both internal and external experience.

\(^b\) Respondents were asked, “What is your level of experience with the audit of expenses (not necessarily vehicle maintenance expenses) as described in the task?” Their response was made by marking one of a series of 51 circles ranging from Low to High. (The response mechanism was similar to Task 2A; see section 3.3.3.1.) Their responses were scaled between 0 and 1; see equation (3).

\(^c\) The Post Baccalaureate degrees were all at the Master’s level except for one Juris Doctorate.

\(^d\) The Post Baccalaureate degrees labeled as business (nonaccounting) include MBAs.
4.1.5. Demographic Effects on Variables

Eight variables were measured using subjects’ responses: implicit theory of integrity (IT2),25 risk of fraud (three measures RF1, RF2, and RF3), integrity inference (INFER1 and INFER2), and information requested (CINFO and BINFO). T-tests and regressions are used to investigate whether subjects’ demographics had an effect on how the subjects responded. The test statistics are presented in Table 7.

Table 7. Effect of demographics on response variables

Panel A: T-test statistic to test $H_0$: Dichotomous demographic has no effect on variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>CIA</th>
<th>CPA</th>
<th>CFE</th>
<th>CMA</th>
<th>CISA</th>
<th>Other Cert</th>
<th>Post-bacc</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT2</td>
<td>–0.47</td>
<td>–2.44</td>
<td>–0.68</td>
<td>0.50</td>
<td>–0.85</td>
<td>–0.21</td>
<td>–0.41</td>
</tr>
<tr>
<td>RF1</td>
<td>–1.13</td>
<td>–1.39</td>
<td>–0.55</td>
<td>1.93</td>
<td>–0.99</td>
<td>2.83</td>
<td>0.22</td>
</tr>
<tr>
<td>RF2</td>
<td>–2.12</td>
<td>–0.58</td>
<td>1.20</td>
<td>0.43</td>
<td>–1.31</td>
<td>1.14</td>
<td>0.68</td>
</tr>
<tr>
<td>RF3</td>
<td>–0.16</td>
<td>–0.04</td>
<td>–0.91</td>
<td>0.98</td>
<td>–0.41</td>
<td>1.25</td>
<td>0.80</td>
</tr>
<tr>
<td>INFER1</td>
<td>1.81</td>
<td>–0.22</td>
<td>–1.22</td>
<td>0.17</td>
<td>0.53</td>
<td>–1.50</td>
<td>–0.55</td>
</tr>
<tr>
<td>INFER2</td>
<td>1.52</td>
<td>–0.94</td>
<td>–0.55</td>
<td>–0.65</td>
<td>–0.05</td>
<td>–1.23</td>
<td>0.22</td>
</tr>
<tr>
<td>CINFO</td>
<td>–1.00</td>
<td>0.71</td>
<td>–0.44</td>
<td>0.46</td>
<td>0.27</td>
<td>–0.47</td>
<td>–1.18</td>
</tr>
<tr>
<td>BINFO</td>
<td>1.39</td>
<td>–1.61</td>
<td>–1.76</td>
<td>0.46</td>
<td>0.08</td>
<td>–1.04</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Panel B: T-value to test $H_0$: Continuous demographic has no effect on variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Months as an auditor</th>
<th>Months as an internal auditor</th>
<th>Experience auditing expenses</th>
<th>Time spent responding</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT2</td>
<td>0.46</td>
<td>–0.46</td>
<td>0.94</td>
<td>0.16</td>
</tr>
<tr>
<td>RF1</td>
<td>–1.62</td>
<td>0.80</td>
<td>1.95</td>
<td>–0.41</td>
</tr>
<tr>
<td>RF2</td>
<td>–1.43</td>
<td>1.21</td>
<td>2.03</td>
<td>b</td>
</tr>
<tr>
<td>RF3</td>
<td>–0.91</td>
<td>0.22</td>
<td>1.67</td>
<td>–0.38</td>
</tr>
<tr>
<td>INFER1</td>
<td>0.76</td>
<td>–0.12</td>
<td>–0.86</td>
<td>–0.67</td>
</tr>
<tr>
<td>INFER2</td>
<td>0.21</td>
<td>0.47</td>
<td>–0.74</td>
<td>–1.13</td>
</tr>
<tr>
<td>CINFO</td>
<td>2.13</td>
<td>b</td>
<td>–1.95</td>
<td>–0.82</td>
</tr>
<tr>
<td>BINFO</td>
<td>0.62</td>
<td>–0.07</td>
<td>–0.68</td>
<td>–0.28</td>
</tr>
</tbody>
</table>

$^a$ The dichotomous demographics indicate whether or not the respondent holds a CIA, CPA, CFE, CME, CMA, CISA, other certification, or post-baccalaureate degree.

$^b$ Significant at the Type I error rate of 0.05.

$^c$ Significant at the family-wise Type I error rate of 0.05 using a Bonferroni technique for multiple comparisons.

$^d$ The continuous demographics indicate (1) the level of experience the respondent had with auditing expenses, (2) the time the respondent spent responding to the research instrument, (3) the months the respondent spent as an auditor (both internal and external), and (4) the months spent as an internal auditor.
Seven dichotomous demographics were investigated for their effect on the eight measured variables. These demographics represent whether the respondent (1) is a Certified Internal Auditor, (2) is a Certified Public Accountant, (3) is a Certified Fraud Examiner, (4) is a Certified Managerial Accountant, (5) is a Certified Information Systems Auditor, (6) has another certification, and (7) holds a post-baccalaureate degree. As shown in Panel A of Table 7, the individual t-test reveal four significant results. However, when using a Bonferroni technique to control for family-wise error rate, only one of the demographic variables was shown to significantly impact a dependent variable.

First, the dependent variable RF2, the feasibility of fraud on the part of the client about whom the integrity cue was given less the feasibility of fraud on the part of the CEO, was significantly different depending on whether the respondent was a Certified Internal Auditor. The respondents with a CIA had a mean RF2 of 0.28 while the non-CIAs had a mean RF2 of 0.13. Second, the independent variable implicit theory (IT) was significantly different depending on whether or not the respondent was a Certified Public Accountant. The CPAs had a mean value of 3.98 for IT2 while the non-CPAs had a mean value of 3.44.

Third, the dependent variable RF1, the feasibility of fraud on the part of the client about whom the integrity cue was given, was significantly different depending on whether the respondent was a Certified Management Accountant. The respondents with a CMA had a mean RF1 of 0.10 while the non-CMAs had a mean RF1 of 0.57. However, only one respondent reported having a CMA making the mean of 0.10 the response of one auditor. These three demographic variables were found to be significant at an alpha
level of 0.05. However, when that alpha was distributed among the tests (of each demographic) using a Bonferroni technique (used to control Type I error rates), these three variables do not meet the criteria for statistical significance.

Finally, the dependent variable RF1, the feasibility of fraud on the part of the client about whom the integrity cue was given, was significantly different depending on whether the respondent held a certification not specifically asked about. The respondents with these other certifications had a mean RF1 of 0.40, while those who reported no other certifications had a mean RF1 of 0.59. These means are significantly different even when controlling for family-wise error rate. No indication was given about what the other certification was held by each respondent.

In addition, four continuous demographics were investigated for their effect on the eight measured dependent variables. These four demographics represent (1) the number of months the respondent has been an auditor (internal plus external), (2) the number of months the respondent has been an internal auditor, (3) the respondent’s experience auditing expenses, and (4) the amount of time the respondent reported spending on the research instrument. As shown in Panel B of Table 7, two significant results were found.

The variable RF2 was significantly affected by the amount of experience the respondent reported having with the audit of expenses. As this self-reported experience increased (between zero and one), regression analysis indicated that RF2 increased ($\beta = 0.004$, $t$-value $= 2.03$, $p$-value $= 0.0447$). Colbert’s (1989) review of experience literature determined that the experience generally does not affect structured tasks, which most of the tasks in this study are, but does affect unstructured and complex tasks. If any of these
variables could be thought to measure a complex concept, it would be RF2, which represents the difference in the feasibility of fraud perpetrated by Conaway (about whom an integrity cue is given) and the feasibility of fraud perpetrated by Alexander (no integrity cue). Though this test yields significant statistical results, the change in the measurement is of little or no practical significance due to the small size of the parameter estimate: as experience with audit of expenses (self-reported) moves from its minimum to maximum value, the feasibility of fraud committed by Conaway as opposed to other (scaled from zero to one) changes only 0.004.

Second, the variable CINFO, the proportion of information requested about Conaway’s character, was significantly affected by the amount of time the respondent spent as an auditor. As months auditing increased, regression analysis indicated that CINFO increased (\( \beta = 0.0007, \) t-value = 2.13, p-value = 0.0351). Again, though this is a statistically significant effect, the practical implications are very small: for every month of audit experience, the proportion of (percent of total) character-related information requested would increase 0.0007.

### 4.2. Manipulation Check

One variable, the level of integrity of a member of management (CUE), is manipulated in this experiment. There are three levels of CUE: high, medium, and low. In Task 2C, a manipulation check, the respondents were asked to assess six characteristics of the member of management: four related to integrity and two related to intelligence. The respondents used a six-point Likert scale (strongly disagree to strongly agree) to respond to the six statements, which were phrased “Chris Conaway seems ... .” For example, “Chris Conaway seems to have integrity.”
Three variables were constructed using these responses. INFER1 is the response to the statement about integrity. INFER2 is the average of the four responses about integrity traits (integrity, candid, responsible, and self-serving). INFER3 is the average of the two distracter statements related to intelligence (well-informed and unintelligent).

Table 8, describes the responses to the manipulation check. To determine whether the manipulation affected the respondents’ assessments of the client’s integrity, four techniques were used: (1) boxplots, (2) correlation between CUE and the respondents’ inferences, (3) ANOVA tests to determine the significance of CUE on the response, and (4) a series of two-sample t-tests determine directionality of the manipulation effect. The details of these examinations follow.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFER1</td>
<td>3.17</td>
<td>1.04</td>
</tr>
<tr>
<td>INFER2</td>
<td>3.20</td>
<td>0.84</td>
</tr>
<tr>
<td>INFER3</td>
<td>4.04</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Panel B: Responses to manipulation check by integrity cue subgroup

<table>
<thead>
<tr>
<th>Variables</th>
<th>CUE = High</th>
<th>Std Dev</th>
<th>CUE = Medium</th>
<th>Std Dev</th>
<th>CUE = Low</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFER1</td>
<td>3.81</td>
<td>0.88</td>
<td>3.17</td>
<td>1.07</td>
<td>2.72</td>
<td>0.88</td>
</tr>
<tr>
<td>INFER2</td>
<td>3.81</td>
<td>0.77</td>
<td>3.09</td>
<td>0.76</td>
<td>2.86</td>
<td>0.72</td>
</tr>
<tr>
<td>INFER3</td>
<td>4.32</td>
<td>0.58</td>
<td>3.99</td>
<td>0.73</td>
<td>3.88</td>
<td>0.66</td>
</tr>
</tbody>
</table>

* INFER1 is the subjects’ response to the statement about integrity.
* INFER2 is the average of the four responses to the statements related to integrity: integrity, candid, responsible, and self-serving. (Because it is a negative characteristic, the self-serving variable is reversed.)
* INFER3 is the average of the remaining two characteristics not related to integrity: well-informed and unintelligent. (Unintelligent is reversed.)
4.2.1. Graphical Depiction of Integrity Inference

Side-by-side boxplots are shown in Figures 2 and 3. The boxplots indicate that as the client’s integrity is manipulated upward, the mean and median of the integrity inference made by the respondent also moves upward. Both figures indicate that there is a larger spread of inferences for the middle level of the manipulated variable. In addition, the boxplots indicate that there are outlying observations, a total of three: one observation where the value of CUE is -1 and INFER1 is 5, and two observations where the value of CUE is 1 and INFER2 is 2. Subsequent statistical tests are conducted both with these three observations included and with them omitted. The results with the omitted outliers are reported only if there is a significant difference in the test results.

4.2.2. Correlation of Integrity Manipulation and Resulting Inference

The correlation between two variables indicates the degree to which two variables move together; that is, as one increases, what happens to the other. While correlation is not an indication of cause-and-effect, it is a measure of the strength of the relationship between the variables. The Pearson correlation coefficient for CUE and INFER1 (integrity) is 0.417 (p-value <0.0001), and the Pearson correlation coefficient for CUE and INFER2 (integrity traits) is 0.442 (p-value <0.0001). The positive coefficient indicates that the variables have a direct relationship (i.e., they move in the same direction). That is, as the manipulation CUE goes from low to high integrity, the respondents inference about the client’s integrity also increases. The statistical significance (p-values) indicates that statistically, a correlation exists; however, the low coefficient depicts a weak association.
The Pearson correlation coefficient for CUE and INFER3 is 0.254 (p-value <0.0030). The integrity manipulation represented by CUE, was not intended to manipulate the respondents inference about the client’s intelligence (measured by INFER3). The correlation shows a very weak but statistically significant correlation between CUE and INFER3.

INFER1 is the subjects’ response to the statement about to integrity.

**Figure 2. Side-by-side boxplots of INFER1 by the manipulated variable CUE**
4.2.3. Analysis of Variance between Manipulation Levels

To determine if the manipulation (CUE) had an effect on the respondents’ mean inferences about the client’s integrity (INFER1 and INFER2) and intelligence (INFER3), a multivariate analysis of variance (MANOVA) test was used. Like ANOVA, MANOVA is used to test whether the dependent means of the subsamples (divided on the independent variable CUE) are significantly different. In the case of MANOVA, the

INFER2 is the average of the four subject responses to the statements related to integrity: integrity, candid, responsible, and self-serving. (Because it is a negative characteristic, the self-serving variable is reversed.)

Figure 3. Side-by-side boxplots of INFER2 by the manipulated variable CUE
dependent means are represented by vectors composed of three dependent variables: INFER1, INFER2, and INFER3. The Wilks’ Lambda test statistic for this MANOVA test has a value of 0.755 (F-value = 6.49 and p-value <0.0001). This test offers strong statistical evidence that the mean vectors are significantly different among manipulated levels of the variable CUE.

Three separate ANOVA tests were used to investigate the effect that CUE has on each of the three inference variables separately. The first ANOVA was used to answer the question “Did the manipulation have an effect on the respondents’ mean answers to ‘Chris Conaway seems to have integrity,’” which was coded as INFER1 and had an average response of 3.17 on a six-point scale (where six is strongly agree). When the sample was divided by the manipulated integrity variable (CUE) as shown in Table 8 Panel B, the responses were 3.81 for the high integrity, 3.17 for medium integrity, and 2.72 for low integrity. The ANOVA test shown in Table 9 revealed that the effect of CUE is significant (F Value = 14.00 with a p-value less than 0.0001). The manipulation was successful in effecting the respondents’ mean impression of the client’s integrity when the CUE revealed higher (lower) integrity.

The second ANOVA was used to answer the question “Did the manipulation have an effect on the respondents’ mean answers to the four integrity-characteristic statements (integrity, candid, responsible, self-serving).” The responses were averaged to create the variable INFER2 (with the negative characteristic, self-serving, being reversed). The average response was 3.20 on a six-point scale (where six is strongly agree). When the sample was divided by the manipulated variable, the responses were 3.81 for the high integrity, 3.09 for medium integrity, and 2.86 for low integrity. The ANOVA test
Table 9. ANOVA tests of the manipulation: The effect of CUE on INFER

<table>
<thead>
<tr>
<th>Variables(^a)</th>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFER1</td>
<td>Model</td>
<td>2</td>
<td>25.31</td>
<td>12.65</td>
<td>14.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>118.39</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFER2</td>
<td>Model</td>
<td>2</td>
<td>20.15</td>
<td>10.07</td>
<td>17.95</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>73.50</td>
<td>0.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFER3</td>
<td>Model</td>
<td>2</td>
<td>4.39</td>
<td>2.20</td>
<td>4.99</td>
<td>0.0081</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>57.63</td>
<td>0.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) INFER1 is the response to the statement about to integrity.
INFER2 is the average to the four response to the statements related to integrity: integrity, candid, responsible, and self-serving. (Because it is a negative characteristic, the self-serving variable is reversed.)
INFER3 is the average of the remaining two characteristics not related to integrity: well-informed and unintelligent. (Unintelligent is reversed.)

revealed that the effect of CUE is significant (F Value = 17.95 with a p-value less than 0.0001). The manipulation was successful in effecting the respondents’ impression of the client’s integrity characteristics when the CUE revealed higher (lower) integrity.

The third ANOVA tested the effect of the manipulation on the two traits not related to integrity; these two statements were related to the intelligence of Conaway: informed and unintelligent (reversed for analysis). The average response from these two statements is denoted as INFER3, which had a mean response of 4.04. When the sample was divided by the manipulated variable, the responses were 4.32 for the high integrity, 3.99 for medium integrity, and 3.88 for low integrity. The ANOVA test revealed that the effect of CUE is significant (F Value = 4.99 with a p-value less than 0.0081). If CUE made an inference only about integrity, INFER3 shouldn’t be significant at all. However, the significance of this variable could be due to an overall positive or negative impression of Conaway.
4.2.4. T-test of Manipulation Directionality

Individual t-tests were conducted to determine if the directionality (as depicted in Figure 4) represents a significant difference between the auditors’ inference of client integrity variables (INFER) at the various levels of the integrity variable (CUE). For each of the three inference variables, three t-tests were conducted to compare high to medium integrity, medium to low integrity, and high integrity to low integrity. The results of the nine t-tests are presented in Table 10.

![Figure 4. The effect of integrity on auditor’s mean inference of integrity](image_url)

Table 10. Directionality of assessed integrity between levels of integrity (CUE)

<table>
<thead>
<tr>
<th>Risk of Fraud Variable</th>
<th>Medium to Low: $H: \text{INFER}<em>{M} - \text{INFER}</em>{L} &gt; 0$</th>
<th>High to Medium: $H: \text{INFER}<em>{H} - \text{INFER}</em>{M} &gt; 0$</th>
<th>High to Low: $H: \text{INFER}<em>{H} - \text{INFER}</em>{L} &gt; 0$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$t$-statistic</td>
<td>$p$-value</td>
<td>$t$-statistic</td>
</tr>
<tr>
<td>INFER1</td>
<td>2.27</td>
<td>0.0256</td>
<td>2.95</td>
</tr>
<tr>
<td>INFER2</td>
<td>1.53</td>
<td>0.1293</td>
<td>4.28</td>
</tr>
<tr>
<td>INFER3</td>
<td>0.78</td>
<td>0.4387</td>
<td>2.29</td>
</tr>
</tbody>
</table>
As expected from the results of the ANOVA tests presented in Table 9, many of the differences were significant and in the expected direction (i.e., as CUE increased, so did INFER). For all the inference variables the difference between the respondents’ mean inference was significantly different between the high and low manipulated integrity levels of the variable CUE. Also, for all three inference variables, the difference between the respondents’ mean inference was significantly different between the high and medium manipulated levels of integrity. However, the difference between the medium and low manipulated levels of integrity was only significant for the variable INFER1. The significance and directional differences of INFER1 between all three levels of CUE indicates that the manipulation was successful in influencing the respondents’ impression about the client’s integrity.

4.3. Tests of Hypothesis 1

Hypothesis 1 (the alternative form) states that when assessing the risk of management fraud, internal auditors will assess the risk of fraud higher, the lower the client’s integrity. For this hypothesis to be accepted, the variable CUE, the manipulated variable about the client’s integrity, will have a significant impact on the internal auditor’s (respondent’s) assessed risk of fraud.

4.3.1. Assessed Risk of Fraud, the Dependent Variable

Three measures of the auditor’s risk of fraud were made in the research instrument. RF1 is feasibility that fraud by Conaway is an explanation (one of seven) for a change in an analytic. The assessment was made by marking one of 51 circles, the farther to the right indicating more feasibility. The variable is scaled between zero and one (see formula 3).
The mean assessment for RF1 was 0.570, and is presented in Table 11 Panel A along with the variable’s standard deviation. In addition, Table 10 Panel B also presents the means of sub-samples when the variable is subdivided by the integrity cue given in the research instrument. A side-by-side boxplot of these sub-samples is presented in Figure 5. Visually, it appears that as integrity (CUE) goes up, the mean assessed risk of fraud (RF1) decreases as predicted. However, the interquartile range for the third sub-sample (CUE=1) depicts less of a consensus by the respondents. The boxplots offer evidence of one outlier: CUE = –1 and RF1 = 0.05. Subsequent statistical tests using RF1 as the dependent variable are conducted both with this observation included and with it omitted. The results with the omitted outlier are reported only if there is a difference in the test conclusions.

RF2 is the difference in feasibility that fraud was committed by Conaway and that fraud was committed by Alexander (the CEO of the parent company). Because there was no evidence about Alexander’s integrity, the difference can be attributed (at least in part) to the integrity cue given about Conaway. This variable is also scaled between zero and one; the mean assessment for RF2 was 0.158. Because it is greater than zero, on average

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>0.570</td>
<td>0.240</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>RF2</td>
<td>0.158</td>
<td>0.271</td>
<td>-0.360</td>
<td>0.900</td>
</tr>
<tr>
<td>RF3</td>
<td>0.252</td>
<td>0.205</td>
<td>0.000</td>
<td>0.800</td>
</tr>
</tbody>
</table>

Table 11. Risk of fraud measurements

Panel A: Mean responses to risk of fraud measurements

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>0.526</td>
<td>0.277</td>
<td>0.531</td>
<td>0.640</td>
</tr>
<tr>
<td>RF2</td>
<td>0.162</td>
<td>0.275</td>
<td>0.134</td>
<td>0.178</td>
</tr>
<tr>
<td>RF3</td>
<td>0.229</td>
<td>0.195</td>
<td>0.203</td>
<td>0.315</td>
</tr>
</tbody>
</table>

Panel B: Mean responses to risk of fraud measurements by integrity cue subgroups

<table>
<thead>
<tr>
<th>Variables</th>
<th>CUE = High</th>
<th>CUE = Medium</th>
<th>CUE = Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
</tr>
<tr>
<td>RF2</td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
</tr>
<tr>
<td>RF3</td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
</tr>
</tbody>
</table>
RF1 is the response variable that represents the feasibility that fraud on the part of Conaway is the reason for the reduction in maintenance expenses relative to sales.

**Figure 5. Side-by-side boxplots of RF1 by the manipulated variable CUE**

the respondents believed it was more feasible that Conaway (as opposed to Alexander) committed fraud to change the analytic. This data is presented in Table 11, and a side-by-side boxplot of these sub-samples is presented in Figure 6. Visually, it appears that as
integrity (CUE) goes up, the mean assessed risk of fraud (RF2) is virtually unchanged. In addition, the boxplots offer evidence of one outlier: where CUE = 0 and RF2=.84.

Subsequent statistical tests using RF2 as the dependent variable are conducted both with this observation included and with it omitted. The results with the omitted outlier are reported only if there is a difference in the test conclusions.

RF3 is the assessed probability that fraud was the reason for the change in analytic. This assessment was made by distributing 100 points among four possible

---

**Figure 6. Side-by-side boxplots of RF2 by the manipulated variable CUE**

RF2 is the response variable that represents the difference in feasibility between fraud on the part of Conaway and fraud on the part of Alexander as the reason for the reduction in maintenance expenses relative to sales.
explanatory factors, one of which was intentional misstatement (fraud). RF3 is scaled between zero and one by taking the points assigned to fraud and dividing by 100. The mean assessment was 0.252. This data is presented in Table 11, and a side-by-side boxplot of these sub-samples is presented in Figure 7. Visually, it appears that as integrity (CUE) goes up, the mean assessed risk of fraud (RF3) does not follow the expected pattern (decreasing). The decrease is obvious from the low-integrity case (CUE = –1) to

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RF3 is the response variable that represents the difference in probability that fraud is the reason for the reduction in maintenance expenses relative to sales.

**Figure 7. Side-by-side boxplots of RF3 by the manipulated variable CUE**
the other two levels; however, the expected decrease in RF3 from medium integrity (CUE = 0) to high integrity (CUE = 1) is not seen. This boxplot offers evidence of one outlier: CUE = 1 and RF3 = .75. Subsequent statistical tests using RF3 as the dependent variable are conducted both with this observation included and with it omitted. The results with the omitted outlier are reported only if there is a significant difference in the test results.

4.3.2. Analysis of Variance of Fraud Risk Assessment between Integrity Levels

A MANOVA test was conducted to test hypothesis 1 (null form): the effect of client’s integrity (CUE) has no effect on the auditor’s assessed risk of fraud (RF1, RF2, and RF3). The Wilks’ Lambda test statistic for this MANOVA test has a value of 0.913 (F-value = 1.99 and p-value 0.0669). However, when the three outliers (described in section 4.3.1.) are omitted from this MANOVA test, the Wilks’ Lambda test statistic becomes 0.891 (F-value = 2.52 and p-value of 0.0219), which offers evidence that the mean vectors of the three dependent variables are significantly different among the manipulated levels of the variable CUE. This evidence supports rejecting the null version of hypothesis 1 in favor of the alternative, that CUE has an effect on the auditors’ means assessed risk of fraud.

Three separate ANOVA tests were used to investigate the effect that CUE has on each of the three risk assessment variables (RF1, RF2, and RF3) separately. Table 12 presents the results of these three ANOVA tests. The three ANOVA tests were repeated with the three outliers (described in section 4.3.1.) omitted, but the results of the tests were not significantly changed.

ANOVA tests the difference in the subsample means of the risk assessment variables that were divided by the variable CUE. ANOVA is used to answer the question,
Table 12. The effect of integrity (CUE) on assessed risk of fraud (ANOVA results)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>Model</td>
<td>2</td>
<td>0.384</td>
<td>0.192</td>
<td>3.33</td>
<td>0.039</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>7.539</td>
<td>0.057</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF2</td>
<td>Model</td>
<td>2</td>
<td>0.047</td>
<td>0.023</td>
<td>0.31</td>
<td>0.736</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>9.755</td>
<td>0.074</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF3</td>
<td>Model</td>
<td>2</td>
<td>0.329</td>
<td>0.164</td>
<td>4.09</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>5.261</td>
<td>0.040</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Are the means of the means of the subsamples from the same population?” The results of these tests indicate that the subsample means of RF1 and RF3 are significantly different (from different populations). However, these results are not seen for the variable RF2. These three ANOVA tests offer mixed evidence about hypothesis 1, but in general support the rejecting the null hypothesis in favor of the alternative.

4.3.3. Directionality of Mean Assessed Risk of Fraud between Integrity Levels

For hypothesis 1 to be supported, as client’s integrity is increased, the auditors’ assessed risk of fraud would be decreased, but this is not the case. As depicted in Figure 8 and in Table 11, assessed risk of fraud is decreased as integrity goes from low to medium for all three risk assessment variables, which is expected. However, the risk of fraud is slightly increased as integrity goes from medium to high in some cases. For each of the three risk assessment variables, three individual t-tests were conducted to compare low integrity to medium integrity, medium integrity to high integrity, and low integrity to high integrity. The results of the nine t-tests are presented in Table 13.

As Figure 8 depicts, the t-tests reveal that for RF1 and RF3, the mean assessed risks of fraud were significantly high for low integrity compared to medium integrity and for low integrity compared to high integrity. The change in the mean assessed risks of
fraud (RF1 and RF3) were not significantly different from the medium to high levels of integrity. None of the means were significantly different for the variable RF2, as expected given the ANOVA results. These results seem to indicate that auditors found the low-integrity cue (defined by tardiness, absenteeism, and deception) an indicator of lower integrity leading to a potential for fraud. The auditors did not find the medium-integrity cue (defined by tardiness and absenteeism) or the high-integrity cue (defined by telling the truth even if it meant losing a charitable donation) significantly different indicators of the client’s integrity with respect to a potential for fraud.
4.4. Tests of Hypothesis 2

Hypothesis 1 tested the main effect of the client’s integrity (CUE) on the auditors’ mean assessed risk of fraud (RF). Hypothesis 2, tests the interaction effect of client’s integrity (CUE) with the auditor’s implicit theory of integrity (IT) on the auditors’ mean assessed risk of fraud (RF). Hypothesis 2 (alternative form) states that when assessing the risk of management fraud, internal auditors who are entity theorists of integrity will weight the moral inferences of the client’s integrity more heavily than those who are incremental theorists of integrity, versus the null of no interaction effect.

An auditor’s implicit theory of integrity identifies the auditor as an entity theorist or an incremental theorist; entity theorists are theoretically more likely to use an integrity cue to predict future behavior than are incremental theorist. Hypothesis 2 predicts that entity-theorist auditors’ mean assessed risk of fraud will be more extreme than that of the incremental-theorist auditors. Each respondent (auditor) is identified as an entity theorists or incremental theorist by the variable IT1, a dichotomous variable that is coded zero for incremental theorists and one for entity theorists. For each respondent, there are three measures of the assessed risk of fraud (RF1, RF2, and RF3). The mean response for each of the three risk-of-fraud variables is presented in Table 14. Graphs of these means are presented in three separate graphs in Figure 9. In addition to the overall mean, mean responses are presented for each of the six cells defined by the auditor’s implicit theory (IT1; entity or incremental) and the integrity cue (CUE; high, medium or low).

To test hypothesis 2, the models specified in formula (5) and formula (6) are used. In both cases the effect of interest for hypothesis 2 is the interaction effect on the auditor’s assessed risk of fraud. There are three measures of the risk of fraud (RF1, RF2,
Table 14. Mean assessed risk of fraud by cell (CUE×IT1)

**Panel A: Assessed risk of fraud (RF1)**

<table>
<thead>
<tr>
<th>Implicit Theory (IT1)</th>
<th>Client Integrity (CUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Entity</td>
<td>0.618</td>
</tr>
<tr>
<td>Incremental</td>
<td>0.449</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>0.526</strong></td>
</tr>
</tbody>
</table>

**Panel B: Assessed risk of fraud (RF2)**

<table>
<thead>
<tr>
<th>Implicit Theory (IT1)</th>
<th>Client Integrity (CUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Entity</td>
<td>0.191</td>
</tr>
<tr>
<td>Incremental</td>
<td>0.137</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>0.162</strong></td>
</tr>
</tbody>
</table>

**Panel C: Assessed risk of fraud (RF3)**

<table>
<thead>
<tr>
<th>Implicit Theory (IT1)</th>
<th>Client Integrity (CUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Entity</td>
<td>0.240</td>
</tr>
<tr>
<td>Incremental</td>
<td>0.220</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>0.229</strong></td>
</tr>
</tbody>
</table>

and RF3; see section 4.3.1.) and two measures of the implicit theory (IT1 and IT2; see section 3.3.1.1.), resulting in a need for two types of tests of hypothesis 2: those with the dichotomous version and those with the continuous measure of the implicit theory. The results of these tests are presented in the following two sections based on the measurement of IT used.

**4.4.1. Tests of Hypothesis 2 with a Dichotomous Measure of Implicit Theory**

A MANOVA test was conducted to test whether the hypothesis 2 model (see equation 5), which created a six-cell design, resulted in significantly different mean vectors (made of RF1, RF2, and RF3) between cells. The Wilks’ Lambda test statistic for this MANOVA test has a value of 0.919 (F-value = 1.83 and p-value 0.0942). However, when the three outliers (described in section 4.3.1.) are omitted from this MANOVA test, the Wilks’ Lambda test statistic becomes 0.889 (F-value = 2.53 and p-value of 0.0213),
Figure 9. The main and interaction effect of CUE and IT2 on assess risk of fraud
which offers evidence that the mean vectors of the three dependent variables are
significantly different among the six cells defined by the interaction of CUE and IT1.

Three individual ANOVA tests were conducted to assess the significance of the
interaction of implicit theory (IT1) and client’s integrity (CUE) on the individual assessed
risks of fraud. The results of these ANOVA tests are presented in Table 15, Panel A.
These individual ANOVA tests reveal that the model (main and interaction effects of
CUE and IT1) is responsible for different cell means in two of the assessed risk of fraud,
measures RF1 and RF3, but not for RF2.

Panel B of Table 15 shows the individual F values that test the effect of the
independent variables on the cell mean differences. In all three ANOVA tests, the
interaction of CUE and IT1 does not have a significant effect on the assessed risk of
fraud. These nonsignificant results do not support an interaction effect.

Table 15. The main and interaction effects of CUE and IT1 on assessed risk of fraud

Panel A: ANOVA Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>Model</td>
<td>2</td>
<td>0.384</td>
<td>0.192</td>
<td>3.33</td>
<td>0.039</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>7.539</td>
<td>0.057</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF2</td>
<td>Model</td>
<td>2</td>
<td>0.047</td>
<td>0.023</td>
<td>0.31</td>
<td>0.736</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>9.755</td>
<td>0.074</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF3</td>
<td>Model</td>
<td>2</td>
<td>0.329</td>
<td>0.164</td>
<td>4.09</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>131</td>
<td>5.261</td>
<td>0.040</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: ANOVA tests of independent variables

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>CUE</th>
<th>IT1</th>
<th>CUE×IT2</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>3.38</td>
<td>2.17</td>
<td>1.78</td>
</tr>
<tr>
<td>RF2</td>
<td>0.30</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>RF3</td>
<td>4.06</td>
<td>0.31</td>
<td>0.52</td>
</tr>
</tbody>
</table>
4.4.2. Tests of Hypothesis 2 with a Continuous Measure of Implicit Theory

The rule used to assign respondents to entity or incremental theorists is as follows: the responses (on a six-point scale) to three statements regarding integrity are averaged; if the average is greater than 3.5 (indicating general agreement that integrity is a fixed characteristic) the respondent is an entity theorist, and an average of less than 3.5 (indicating general disagreement) makes the respondent an incremental theorist. Using that rule, a respondent with an average score of four (somewhat agree) would be an entity theorist just like a respondent with an average score of six (strongly agree). Theoretically, an entity theorist with an average score of six would weight the integrity cue more than the entity theorist with a score of four. In other words, the implicit theory variable might be more descriptive if it were a continuous variable (represented as IT2) as opposed to a dichotomous variable (IT1). A frequency distribution of IT2 is shown in Figure 10.

A multivariate multiple regression test was conducted to test hypothesis 2 (null form): the effect of the interaction of client’s integrity (CUE) and the auditor’s implicit theory (IT2) has no effect on the auditor’s assessed risk of fraud (RF1, RF2, and RF3).

![Frequency distribution of implicit theory responses (IT2)](image)
The model specified in formula (6) was used, where RF is a matrix of the three RF variables, RF1, RF2, and RF3. The Wilks’ Lambda test statistic for this multivariate regression test has a value of 0.883 (F-value = 1.80 and p-value 0.0677). However, when the three outliers (described in section 4.3.1.) are omitted from this test, the Wilks’ Lambda test statistic becomes 0.866 (F-value = 2.05 and p-value of 0.0337), which offers evidence that the model is a significant determinant of the three dependent variables.

Three regression analyses, one each per dependent variable, was conducted to assess the significance of the interaction model and its components on the dependent variable. The results of these regressions are presented in Table 16. For hypothesis 2 (null form) to be rejected in favor of the alternative, the interaction would have to yield a $\beta_3$ significantly less than zero. $\beta_3$ is not significant in any of the three regressions. There is no evidence to support rejecting the null hypothesis of no interaction effect. After removing the outliers (see section 4.3.1.), the results were virtually unchanged. However, for the dependent variable RF1, the p-value on the interaction decreased to 0.0598 for a parameter estimate of 0.041.

**Table 16. The effect of integrity and implicit theory (IT2) on assessed risk of fraud**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dep. Variable = RF1</th>
<th>Dep. Variable = RF2</th>
<th>Dep. Variable = RF3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$ Estimate</td>
<td>p-value</td>
<td>$\beta$ Estimate</td>
</tr>
<tr>
<td>Intercept $\beta_0$</td>
<td>0.417</td>
<td>&lt;0.0001</td>
<td>0.085</td>
</tr>
<tr>
<td>CUE $\beta_1$</td>
<td>-0.172</td>
<td>0.0453</td>
<td>-0.108</td>
</tr>
<tr>
<td>IT2 $\beta_2$</td>
<td>0.043</td>
<td>0.0177</td>
<td>0.021</td>
</tr>
<tr>
<td>CUE*IT2 $\beta_3$</td>
<td>0.033</td>
<td>0.1361</td>
<td>0.028</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.0897</td>
<td></td>
<td>0.0165</td>
</tr>
</tbody>
</table>
4.5. Tests of Hypothesis 3

Hypothesis 3 (alternative form) states that entity-theorist auditor will request more additional character information than will incremental-theorist auditors. Given a space to request six additional pieces of information respondents requested between zero and six. These requests were coded as being related to character information of Conaway or related to the incentive bonus Conaway stood to receive. The portion of character information was calculated as the number of character-information requests divided by the total number of requests and coded as the variable CINFO, a continuous variable between zero and one. A similar computation was made to create the variable related to bonus information, BINFO, a continuous variable between zero and one. The mean responses for these variables are presented in Table 17; in addition, the means of subgroups (distinguished by the respondents’ implicit theory, IT1, and the level of the integrity cue received, CUE) are also presented.

4.5.1. Tests of Hypothesis 3 with a Dichotomous Measure of Implicit Theory

For hypothesis 3 (alternative form) to be supported, the mean additional information requested by the entity theorists must be significantly greater than the mean

Table 17. Mean additional information requested by type

<table>
<thead>
<tr>
<th>Implicit Theory (IT1)</th>
<th>Client Integrity (CUE)</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity</td>
<td>High</td>
<td>0.071</td>
<td>0.049</td>
<td>0.047</td>
<td>0.053</td>
</tr>
<tr>
<td>Incremental</td>
<td>High</td>
<td>0.113</td>
<td>0.120</td>
<td>0.042</td>
<td>0.094</td>
</tr>
<tr>
<td>Totals</td>
<td>High</td>
<td>0.093</td>
<td>0.084</td>
<td>0.045</td>
<td>0.072</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implicit Theory (IT1)</th>
<th>Client Integrity (CUE)</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity</td>
<td>High</td>
<td>0.073</td>
<td>0.073</td>
<td>0.052</td>
<td>0.064</td>
</tr>
<tr>
<td>Incremental</td>
<td>High</td>
<td>0.018</td>
<td>0.036</td>
<td>0.032</td>
<td>0.029</td>
</tr>
<tr>
<td>Totals</td>
<td>High</td>
<td>0.043</td>
<td>0.055</td>
<td>0.045</td>
<td>0.048</td>
</tr>
</tbody>
</table>
information requested by the incremental theorists. Two t-tests were used to make this
determination.

The first t-test tests the alternative hypothesis that character information requested
by entity theorists is greater than character information requested by incremental theorists
(\(CINFO_{ET} > CINFO_{IT}\)). The difference in the group means of CINFO is 0.041, with the
CINFO\(_{IT}\) being larger than CINFO\(_{ET}\); it appears from the means themselves that this
hypothesis will be rejected. The test statistic (using pooled variance) has a value of –1.54
and a p-value of 0.1268, which does not support rejecting the null hypothesis.

The second t-test tests the alternative hypothesis that the bonus information
requested by entity theorists is greater than the bonus information requested by
incremental theorists (\(BINFO_{ET} > BINFO_{IT}\)). The difference in the group means of BINFO
is 0.035, with the BINFO\(_{ET}\) being larger than BINFO\(_{IT}\). The test statistic (using pooled
variance) has a value of 1.88 and a p-value of 0.0625, which does not support rejecting
the null hypothesis.

4.5.2. Tests of Hypothesis 3 with a Continuous Measure of Implicit Theory

As stated earlier, the dichotomous variable used to describe the implicit theory
(IT1) may fail to capture differences between two respondents categorized as an entity
(or incremental) theorists who have a difference in their continuous implicit theory score
(IT2). Therefore, the tests of hypothesis 3 were rerun using the continuous version of the
independent variable. Two regressions analyses were conducted to examine the effects of
implicit theory (IT2) on types of additional information requested (CINFO and BINFO)
using the following model:

\[
INFO = \beta_0 + \beta_1 IT2 + e .
\]
For hypothesis 3 (alternative form) to be supported, as IT2 increases (as the respondent moves toward an entity theorist), the additional information requested related to character or bonus should also increase. In other words $\beta_1$ should be positive.

The results of these two tests are presented in Table 18. There was no evidence to support the hypothesis that implicit theory (IT2) would have an effect on the amount of character information requested (CINFO); the value of $\beta_1$ is $-0.012$ with a $p$-value of $0.2766$. Nor is there significant evidence to support the hypothesis that implicit theory (IT2) would have an effect on the amount of bonus information requested (BINFO); the value of $\beta_1$ is $0.015$ with a $p$-value of $0.0585$.

4.5.3. A Possible Interaction Affecting the Results of Hypothesis 3

Though there is no theory to support it, it is possible that the integrity of the client (CUE) could have a main effect or interaction effect (IT2×CUE) on the quantity and type of information requested (CINFO and BINFO). To examine the possibility of such an effect, two regression test were conducted using the following model:

$$INFO = \beta_0 + \beta_1 IT2 + \beta_2 CUE + \beta_3 CUE \times IT2 + e.$$ (8)

The main effect of CUE is represented by $\beta_2$ and the interaction with IT2 is represented by $\beta_3$. If $\beta_2$ or $\beta_3$ is significantly different from zero, CUE or the interaction effect of

<table>
<thead>
<tr>
<th>Table 18. The effect of the implicit theory (IT2) on information requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variable</td>
</tr>
<tr>
<td>Intercept $\beta_0$</td>
</tr>
<tr>
<td>IT2 $\beta_1$</td>
</tr>
<tr>
<td>R$^2$</td>
</tr>
</tbody>
</table>
CUE×IT2 is significant. Because there is no supporting theory, no prediction is made about the significance or direction of these two parameters. The results of these regressions are presented in Table 19. Neither $\beta_2$ nor $\beta_3$ are significant, offering no evidence that client integrity (CUE) or its interaction with auditors’ implicit theory (CUE×IT2) has an effect on the quantity or type of additional information requested.

4.6. Tests for Order Effects

Regression analysis was used to determine whether the order of questions in a particular task had an effect on the variable measured from that task. For the most part, each research instrument had a different, randomized order of questions in each task to avoid the effects of order. See Appendix B for a complete description of randomization. No order of questions was found to have a significant effect on the responses. A list of all the tests run and their significance is presented in Table 20.

4.7. Alternative Tests of Hypotheses

The planned tests described in sections 4.3, 4.4, and 4.5, essentially yielded mixed or no evidence in support of the three hypotheses. This research project investigates the effect of two independent variables on the auditors’ assessed risk of management fraud. The first independent variable is the auditors’ implicit theory, a personal characteristic

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>$\beta_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.007</td>
<td>0.016</td>
<td>-0.012</td>
<td>0.004</td>
<td>0.0291</td>
</tr>
<tr>
<td>IT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUE×IT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19. The effect of the implicit theory and integrity on information requested

$INFO = \beta_0 + \beta_1 IT2 + \beta_2 CUE + \beta_3 CUE\times IT2$

<table>
<thead>
<tr>
<th>Dep. Variable = BINFO</th>
<th>$\beta$ Estimate</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_0$</td>
<td>-0.007</td>
<td>0.8184</td>
</tr>
<tr>
<td>$\beta_1$</td>
<td>0.016</td>
<td>0.0531</td>
</tr>
<tr>
<td>$\beta_2$</td>
<td>-0.012</td>
<td>0.7702</td>
</tr>
<tr>
<td>$\beta_3$</td>
<td>0.004</td>
<td>0.6840</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dep. Variable = CINFO</th>
<th>$\beta$ Estimate</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_0$</td>
<td>0.114</td>
<td>0.0097</td>
</tr>
<tr>
<td>$\beta_1$</td>
<td>-0.011</td>
<td>0.3221</td>
</tr>
<tr>
<td>$\beta_2$</td>
<td>0.090</td>
<td>0.1053</td>
</tr>
<tr>
<td>$\beta_3$</td>
<td>-0.018</td>
<td>0.2101</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$R^2$</th>
<th>0.0291</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
<td>0.0358</td>
<td></td>
</tr>
</tbody>
</table>
Table 20. Tests for order effects

<table>
<thead>
<tr>
<th>Task</th>
<th>Variable a</th>
<th>Was order effected by</th>
<th>Test Statistic b</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT2</td>
<td>Order of question in Task 1</td>
<td>0.43</td>
<td>0.6683</td>
</tr>
<tr>
<td>1</td>
<td>IT2</td>
<td>Order of three questions of interest in Task 1</td>
<td>1.14</td>
<td>0.2577</td>
</tr>
<tr>
<td>2A</td>
<td>RF1</td>
<td>Order of questions in Task 2A</td>
<td>1.20</td>
<td>0.2338</td>
</tr>
<tr>
<td>2A</td>
<td>RF2</td>
<td>Order of questions in Task 2A</td>
<td>0.22</td>
<td>0.8256</td>
</tr>
<tr>
<td>2B</td>
<td>RF3</td>
<td>Order of questions in Task 2B</td>
<td>1.12</td>
<td>0.2282</td>
</tr>
<tr>
<td>2C</td>
<td>INFER1</td>
<td>Order of questions in Task 2C</td>
<td>–1.13</td>
<td>0.2607</td>
</tr>
<tr>
<td>2C</td>
<td>INFER2</td>
<td>Order of questions in Task 2C</td>
<td>–0.72</td>
<td>0.4753</td>
</tr>
</tbody>
</table>

a Some variables were not tested for order effects for the following reasons: (1) the variable is a manipulation of another variable (e.g., IT1 is a manipulation of IT2), or (2) the variable resulted from a response not effected by question order (e.g., CINOF, BINFO).

b Test statistic is the t-value for the used to evaluate the significance of the parameter estimate for the variable used to represent order.

that cannot be manipulated by the researcher. The second independent variable is client integrity, manipulated by the three-level variable CUE (high, medium and low).

As a check of this manipulation, the auditor demonstrates his/her own assessment of the client’s integrity, which is coded as the variable INFER1. The tests of hypotheses 1 and 2 were repeated using INFER1\textsuperscript{27} in place of the manipulated variable CUE. The results of these additional tests are discussed in the following sections. No retest is made of hypothesis 3 because it does not address client integrity as an explanatory variable.

4.7.1. Retest of Hypothesis 1

Hypothesis 1 (alternative form) states that when assessing the risk of management fraud, internal auditors will assess the risk of fraud higher, the lower the client’s integrity. A multivariate multiple regression test was conducted to retest hypothesis 1 (null form): the auditor’s assessment of client’s integrity (INFER1) has no effect on the auditor’s assessed risk of fraud (RF1, RF2, and RF3). The following model was used:

\[
RF = \beta_0 + \beta_1 \text{INFER1} + e, \tag{9}
\]
where RF is a vector of the three risk of fraud variables, RF1, RF2, and RF3. The Wilks’ Lambda test statistic for this multivariate regression test has a value of 0.908 (F-value = 4.380 and p-value 0.0057), which offers evidence that the model is a significant determinant of the three dependent variables.

Three regression analyses, one each per dependent variable, was conducted to assess the significance of the INFER1 on the dependent variable. To support hypothesis 1, the value of $\beta_1$ should be less than zero, which would indicate that as client integrity goes down, the risk of fraud increases. The results of these three regressions, presented in Table 21, show that $\beta_1$ is negative and significant in all three models. These tests offer strong evidence for rejecting null hypothesis 1 in favor of the alternative: the higher client’s integrity, the lower the auditor’s assessed risk of fraud. However, in this case, the hypothesis must be restated as “the higher the auditor’s assessment of client integrity, the lower the auditor’s assessed risk of fraud.”

4.7.2. Retest of Hypothesis 2

Hypothesis 2 expands the prediction about hypothesis 1 to include the auditor’s implicit theory of integrity and its interaction with assessment of client integrity as a predictor of the risk of fraud. Specifically, hypothesis 2 states that when assessing the risk of management fraud, internal auditors who are entity theorists of integrity will weight

| Table 21. The effect of integrity (INFER1) on assessed risk of fraud (RF) |
|-----------------------------|-----------------------------|-----------------------------|
| Independent Variables      | Dep. Variable = RF1         | Dep. Variable = RF2         | Dep. Variable = RF3         |
| Intercept $\beta_0$        | $\beta$ Estimate 0.781      | $\beta$ Estimate 0.305      | $\beta$ Estimate 0.389      |
| INFER1 $\beta_1$          | $\beta$ Estimate -0.066     | $\beta$ Estimate -0.046     | $\beta$ Estimate -0.043     |
| $R^2$                      | 0.0794                      | 0.0314                      | 0.0478                      |


the moral inferences of the client’s integrity more heavily than those who are incremental theorists of integrity. To retest this hypothesis, the manipulated integrity variable CUE is replaced with the auditor’s inference of client integrity (INFER1).

A multivariate multiple regression test was conducted to retest hypothesis 1 (null form): the interaction of the client’s integrity as assessed by the auditor (INFER1) and the auditor’s implicit theory (IT2) has no effect on the auditor’s assessed risk of fraud (RF1, RF2, and RF3). The following model was used:

$$RF = \beta_0 + \beta_1 \text{INFER1} + \beta_2 \text{IT2} + \beta_3 \text{INFER1} \times \text{IT2} + e, \quad (10)$$

where RF is a vector of the three risk of fraud variables, RF1, RF2, and RF3. The Wilks’ Lambda test statistic for this multivariate regression test has a value of 0.849 (F-value = 2.40 and p-value 0.0123), indicating that the model with the interaction term is a significant determinate of the three risk of fraud assessments.

Three regression analyses, one each per dependent variable, was conducted to assess the significance of the interaction of INFER1 and IT2 on the dependent variables. Applying the implicit theory, the higher the value of IT2 (leaning more toward an entity theorist), the more extreme and negative the effect on risk of fraud; in other words, the prediction is that $\beta_3$ should be less than zero. In three regressions (using the three measure of risk of fraud as dependent variables), $\beta_3$ was not significant, offering no additional evidence that would support rejecting the null version of hypothesis 2.

4.8. End Notes

22 Each of the six chapters had a separate lottery. The lottery prize was a gift certificate valued between $75 and $100 to local restaurants or online retailers. Respondents were informed that if a minimum number of people (based on a percentage of membership) responded from their chapter, a drawing would be held to award one certificate to one of the respondents. Of the six chapters, only one met the minimum number of respondents and resulted in the awarding of a prize.
23 Many companies have policies and physical controls (firewalls) against downloading executable files. The Excel version of the research instrument contains macros, which are small executable programs. The offer for a paper version was intended to give respondents an alternative to downloading an executable file. In addition, anonymity could be better preserved if the research instrument were returned in a postage-paid envelope rather than via email, which contains identifying information.

24 Colbert (1989) reviews literature related to the effect of experience on auditors’ judgments. Though results are mixed, the general consensus of these 17 studies is that auditor experience is a significant factor in complex and unstructured tasks, but not significant in unstructured tasks. The same consensus does not apply to comparing students to auditors, only more-experience to less-experienced auditors.

25 There are two implicit theory variables, IT1 and IT2. Because they use the same raw data to construct the dichotomous and continuous variables, the effect of demographics is investigated on IT2 only.

26 The Pearson correlation coefficients change to 0.457 for INFER1 and 0.476 for INFER2 with the outliers omitted.

27 INFER1 (integrity inference only) was chosen as opposed to INFER 2 (inference about four integrity characteristics averaged together) because the differences between high and low, high and medium, and medium and low were all statistically significant for INFER1. See section 4.2.4.
5. CONCLUSION

5.1. Research Conclusions

The purpose of this research project was to determine how internal auditors would use the cues provided about their client’s integrity. One of three integrity cues was included in a narrative upon which the auditors based their answers to some planning questions. The overall conclusions are presented below.

The first hypothesis tested whether the integrity cue had an effect on the auditor’s assessment of management fraud risk. In this study, there was evidence to conclude that integrity affects the auditors’ mean assessment of management fraud risk. In eight tests of this hypothesis (one MANOVA, three ANOVA, one multivariate regression, and three regressions), seven of the tests offered evidence for rejecting the null of no effect.

The first four tests of hypothesis 1 (section 4.3.2.) examined the effect of a three-level manipulated integrity variable on the assessed risk of fraud. These tests revealed that the manipulation was successful in affecting the mean assessed fraud risk for two of the three measures of risk of fraud. However, subsequent t-tests for directionality (section 4.3.3.) showed that the expected directionality (the lower the integrity, the higher the fraud risk) was only observed when comparing the low-integrity level to another level. That is when comparing the medium-level to the high-level of integrity, the expected effect was not found. From a practical standpoint, the auditor’s assessed risk of management fraud averaged more than 10% higher when integrity was low as compared to the other integrity-levels.

Hypothesis 1 was retested using the auditor’s assessed level of integrity rather than the cue level as the predicting variable. In the four statistical tests used for this retest,
the auditor’s assessed level of integrity significantly affected the assessed risk of fraud (all three measures). The retest of this hypothesis indicates that the integrity inferences made by internal auditors are used to assess the risk of management fraud. From a practical standpoint, the regression parameter indicates that as the auditors’ integrity inference increased from one (lowest client integrity) to six (highest client integrity), the risk of fraud dropped between 21.5% and 33%.30

The second hypothesis tested whether the auditor’s implicit theory of integrity, a personal conviction, interacts with the effect of client integrity on the auditor’s assessed risk of fraud. The auditor’s implicit theory of integrity was modeled after Dweck and Leggett (1988) and was measured using three questions about a person’s ability to change his/her integrity characteristics. Theoretically, auditors who were scored as entity theorists of integrity (as opposed to incremental theorists) would use the integrity cue to predict future behavior. In other words, the entity theorists would expect future low-integrity (high-integrity) behavior from a person who exhibited it in the past, while an incremental theorist would not have an expectation of future behavior based on past behavior.

Twelve statistical tests were used to test this hypothesis (one MANOVA, three ANOVAs, two multivariate regressions, and six regressions), but no evidence was found to support this hypothesis using the interaction of implicit theory and cue level, or during the retest using the interaction of implicit theory and the auditor’s assessed level of client integrity (see section 4.4.). Dweck and Leggett (1988) developed a general implicit theory that other researchers (e.g., McConnell 2001; Gervey, Chiu, Hong, and Dweck 1999) have investigated as a mitigating effect on social judgments. In a sense, the
auditors’ assessment of client integrity is a social judgment, and the effects found in this prior research should be found in this project as well. Failure to find such results may be a problem with the research design or lack of statistical power (see section 5.3.). Alternatively, the judgment internal auditors make about client integrity may not be the same as a social judgment. Instead, because auditors are trained professionals, their judgments made about client integrity may not be biased by their personal convictions.

The third hypothesis tested whether the auditors’ implicit theory of integrity affected the amount of additional information (bonus-related or character-related) requested by the auditors. Theoretically, entity theorists would request more character-related information. Using t-tests to compare the mean information requested between entity and incremental theorists (see section 4.5.), no strong evidence was found to support this hypothesis. Marginally-significant evidence (a p-value just above the 0.05 level) was found in support of entity theorists requesting more bonus-related information; however, the additional amount of evidence is negligible, and offers no practical significance. Again, the lack of evidence may be an indication that an auditor’s training prevents or lessens the effects of the auditor’s personal convictions in a professional setting.

5.2. Potential Contributions and Suggestions for Future Research

This research was ultimately inconclusive because the research hypotheses related to the implicit theory were not rejected in favor of the experimental null. However, support of the first hypothesis, which duplicated the findings of Church, McMillan, and Schneider (2001a and 2001b), sustains the idea that an auditor’s impression of the client’s integrity does have an effect on the auditor’s assessment of management fraud risk.
Future researchers may be interested in exploring how auditors seek out information about client integrity and the degree to which the nature of that evidence affects the auditor’s assessment of management fraud risk.

During the manipulation check of this project, there was no statistical difference found between the medium and low levels of the manipulation, but the high level of integrity was statistically higher than the other two. Future researchers may wish to investigate how different observed client activity would cause the auditor’s integrity inference to change. Such research could have a significant impact on guiding auditor training and possibly future auditing standards related to client integrity.

This research project is an investigation of a personal characteristic of an auditor and its effect on internal auditor’s assessment of management fraud risk. Though this study is inconclusive, researchers may wish to continue research in this area by testing the effects of other personal characteristics and convictions. This study introduces the implicit theory (Dweck and Leggett 1988) into the body of accounting research. No evidence is found to support a mitigating effect caused by the implicit theory of integrity, but the lack of evidence about the effect is in conflict with findings from other disciplines (e.g., Gervey, Chiu, Hong, and Dweck 1999 investigated the effects in a jury setting). Future research into why the implicit theory has an effect in some settings but not in accounting (or other settings) would be needed to explain this conflict.

Dweck and Leggett’s (1988) foundational research is based on the concept that prior to any observation of cues, the observer has a preformed notion about whether a particular trait is fixed (entity theorists) or variable (incremental theorist) within a given person. McConnell (2001) investigated how entity theorists and incremental theorists
respond to a series of integrity cues. Additional research is needed to determine whether
Dweck and Leggett’s implicit theory is a factor that affects how observers revise their
beliefs (as seen in Ashton and Ashton 1988 and Bamber 1983) as additional evidence is
received.

5.3. Potential Limitations

As with any research project, this study is subject to several limitations. Many of
these limitations are related to validity, which refers to the ability of the researcher to
measure what s/he thinks is being measured. These limitations are discussed in the
following subsections.

5.3.1. Lab Experiments and External Validity

This study is an experiment in which internal auditors are asked to use
information provided by the researcher to make the types of decisions that auditors make
in their everyday jobs. However, experiments are performed with a limited amount of
information (i.e., “in a laboratory”) as opposed to unlimited information (i.e., in the
whole world). The purpose of this researcher-imposed limitation is both practical (to limit
the extent of the research project and the time required to participate) and to hold
constant or eliminate as many variables as possible to more effectively study the
variables of interest.

Unfortunately, the laboratory environment is much smaller than the actual world
in which the auditor operates, so the researcher must be concerned about whether the
auditors’ responses are the same or similar to their real-world actions. If the researcher
cannot make that assumption, then the study is not generalizable beyond the scope of the
experiment, which is a threat to the study’s external or ecological validity.
5.3.2. Subject Experience

The experiences of the subject prior to and during the completion of the research instrument may have an effect on their responses. To a certain extent, the experiences of the subjects are the key to drawing conclusions about how internal auditors behave. However, the research instruments were completed by the subjects in a variety of different settings over a four-month period of time.

Because the researcher was not in control of the local environment in which the instrument was completed, disruptions, distractions, and other confounding elements could have had an effect on the way a particular subject responded. In addition, the global environment (e.g., world news, seasonal) may have changed during the four-month period causing a larger set of information to be used by those subjects who responded later. There is no measure of these environmental changes included in this study; therefore, their effects cannot be measured.

5.3.3. Construct Validity versus Hypothesis-Guessing

This study is subject to concerns about construct validity, (i.e., the extent to which variables capture the concept of interest). Construct validity is often a problem with research involving subjects because the researcher does not want to directly ask the question directly for fear of hypothesis-guessing. Hypothesis-guessing is the practice of the subjects trying to determine how the researcher wants him/her to answer. The Hawthorne Effect is a famous case in which workers were more productive, but the researchers couldn’t determine whether the improvement was due to the improved lighting (the variable of interest) or the presence of the researcher.
Essentially, the researcher must find a balance between threats to construct validity and hypothesis-guessing. “The problem of hypothesis-guessing can best be avoided by making hypotheses hard to guess” (Cook and Campbell 1979, 66). Making the hypothesis hard to guess is accomplished by asking questions indirectly. In this study however, the questions are asked directly (e.g., the respondent is asked directly to assess the risk of fraud). For that reason, there is limited threat to construct validity.

Unfortunately, because of the directness of the questions, this study is more subject to hypothesis-guessing. To minimize the effects of hypothesis-guessing, most of the questions of interest are included with other alternatives (distracters) that may lead the respondents to believe that the research is about something else or about several things, which hopefully takes the focus off the subject of management fraud. Therefore, the variables, particularly the dependent variables (RF1, RF2, RF3, BINFO, and CINFO), should be a good proxy for their intended construct.

5.3.4. Statistical Conclusion Validity

Because the tests of hypotheses 2 and 3 failed to result in a rejection of the null, there is a question of whether the tests’ power was sufficient enough to reject the null hypothesis. That is, was there an effect that these tests were not powerful enough to detect? This question particularly applies to hypothesis 2, a 3×2 design resulting in six cells, which creates a need for more observations than the other tests to maintain a minimum level of power. The power of a study is influenced by the sample size. Using the tables developed by Bratcher, Moran, and Zimmer (1970) and preliminary standard deviation, a sample size of at least 18 observations per cell was needed to achieve a power of .80, but due to discarded observations, one cell contained only 17 observations.
Collection of additional responses may increase the power and allow smaller effects to be detected that were not identified in this project. The tables of Bratcher, Moran, and Zimmer (1970) were used to decide on the original sample size. With six cells in the design and by setting alpha-risk at 0.05, power at 0.80, the needed sample size of 18 observations per cell was found by using a ratio of $\Delta/\sigma$ (maximum mean difference divided by standard deviation) of 1.25. The standard deviation was obtained from test data. Using the actual standard deviation of the observations, 31 27 observations per cell would be needed to find a mean difference of approximately 0.25.

5.4. End Notes

28 The reason this expected effect was not found in hypothesis 1 may have revealed by the manipulation check (sections 4.3.2. and 4.3.3.), which revealed that the manipulated integrity variable was not completely successful in affecting the integrity inference formed by the subjects.

29 The average difference of more than 10% was calculated using the two statistical test that were statistically significant. It was calculated as the difference between the mean assessed risk of fraud at the low level and the other two levels $[\frac{(0.640–0.526)+(0.640–0.531)+(0.315–0.229)+(0.315–0.203)}{4}= 0.105]$. 

30 The change in risk of fraud was calculated by multiplying the parameter estimate by the difference between the low and high integrity inference (6–1=5):

- For RF1, the feasibility of fraud as an explanation for change in analytic, $-0.066\times5= -0.33$ gap in risk of fraud between low and high integrity inference;

- For RF2, the feasibility of fraud by Conaway as opposed to other members of management, $-0.046\times5= -0.23$ gap; and 

- For RF3, the probability of fraud as an explanation for change in analytic, $-0.043\times5= -0.215$ gap.

31 The standard deviations of the three dependent variables used in hypothesis 2 are 0.240 for RF1, 0.271 for RF2, and 0.205 for RF3.
REFERENCES


APPENDIX A: PAPER RESEARCH INSTRUMENT

The eight-page research instrument (paper version) is presented in this appendix. The instrument was printed on ledger paper (11”×17”) and folded to create a four-page booklet printed on fronts and backs. The layout of facing pages is shown in Figure 11 below and the actual content of the pages is presented on the following eight pages.

For three reasons, the research instrument completed by respondents may be different from the one presented in this appendix: (1) there are three versions related to the experimental manipulation of the variable CUE; (2) some versions were electronic instead of paper; and (3) the order of questions was randomized. These three variations are discussed in detail in Appendix B. In the version presented here, the questions are ordered so that the responses of interest are listed first and distracters follow.

Figure 11. Layout of paper research instrument
INTERNAL AUDIT PLANNING DECISIONS

The goal of this dissertation project is to develop an understanding of how an internal auditor's planning judgments and decisions can impact the outcome of an audit. Because you practice internal auditing, your expertise is a necessary element for furthering the understanding of how audits are conducted, which may be helpful in standard setting and to improve training and practice.

The responses from this questionnaire will be presented in summary form only. You are not required to provide your name or other identifying information on this questionnaire. If you wish, you may request the results of this study by emailing swatson@lsu.edu.

After reading and agreeing to the consent information below, you will be walked through six tasks (1, 2A, 2B, 2C, 2D, and 3) in which your opinions and professional judgment should influence your responses. There are no "right" answers. Thanks you for your participation in this research project.

CONSENT

By completing this questionnaire, you have agreed to participate in research regarding internal audit planning decisions. This research project has been approved by the Louisiana State University Human Subjects Committee. Before continuing on to the questionnaire, it is important for you to understand the following:

1. The procedure only involves completing a questionnaire.

2. You will not face any significant discomforts or stresses. There is no risk to participating.

3. The results of your participation are confidential and will not be released in any individually identifiable form. Questionnaire contains no identifying information.

4. The investigator, Stephanie Watson, will answer any further question about the research if you wish (see contact information below).

Your participation in this research is completely voluntary, and you may choose not to participate by not returning a completed questionnaire. Your questionnaire will not contain any identifying information that will link your responses to you; therefore, once your questionnaire has been returned, it cannot be removed from the study at your request. To preserve anonymity, you do not need to sign and return this consent form.

STEPHANIE F. WATSON
Doctoral Candidate
LSU Department of Accounting
3101 CEBA
Baton Rouge LA 70803
Phone: (225) 578-6206
email: swatso1@lsu.edu
## SECTION 1: CONTROL OVER OUTCOMES

**TASK 1:** Ten statements are presented below regarding the control people have over outcomes in their lives. Indicate the degree to which you *agree* or *disagree* with each of the ten statements by marking the appropriate circle.

<table>
<thead>
<tr>
<th>Task</th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A person’s integrity is something very basic about him/her, and it cannot be changed much.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.</td>
<td>Whether a person is honest and candid or not is deeply ingrained in his/her personality and cannot be changed much.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.</td>
<td>There is not much that can be done to change a person’s integrity traits such as whether s/he is self-serving or law-abiding or has integrity, honesty, or diligence.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.</td>
<td>If a person sets realistic goals, s/he can succeed no matter what.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5.</td>
<td>Professional success is mostly a result of social and economic backgrounds, which diminish a person’s ability to affect his/her success significantly through effort.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6.</td>
<td>How a person behaves is a changeable characteristic; behavior patterns can be altered if a person wants them to change.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7.</td>
<td>Without timing, hard work is useless; being at the right place at the right time is essential for achieving goals in life.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8.</td>
<td>A person gets promoted because the boss likes him/her personally, not because of the quality or quantity of work performed.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9.</td>
<td>Chance has nothing to do with being successful; a person is in control of the level of success s/he achieves.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10.</td>
<td>Whatever plans a person makes, there is always something that will interfere with them; there isn’t much a person can do to ensure success.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
SECTION 2: INTERNAL AUDIT NARRATIVE AND TASKS

You are an internal auditor for TransportNation, Inc., a transportation company with several divisions including charter airlines, taxi services, and a national fleet of moving vans. You have recently been assigned to the team that will audit maintenance expenses for the Chess Cab division of TransportNation. This audit is still in the planning stage. An excerpt from the planning memorandum is provided below, which you should read before proceeding to the tasks in this section. You may refer back to this memorandum while completing the tasks.

Audit Planning Memorandum (excerpt)
TransportNation, Inc.

Per our master audit plan, maintenance expenses of Chess Cab are audited on an annual basis, budgeting more audit effort in even-numbered years. Therefore, the 2002 audit of these expenses has budgeted 128 audit hours (two auditors for eight days) to conduct the audit, which will begin a week from Monday. The audit program should include attention to the items discussed below.

Key Employees
The key employees that should be interviewed are Terry Alexander, CEO of TransportNation, Chris Conaway, Director of Chess Cab, and Shawn Whealor, Mechanic Supervisor.

Maintenance Expenses
During the course of this audit, pay careful attention to the recent reduction of maintenance expenses as depicted in the figure to the right. In April 2000, Terry Alexander replaced the director of Chess Cab with the specific directive to reduce these costs. As incentive, the new director’s bonus in the first five years is tied to a reduction of these costs.

Client Relationships
Chris Conaway, Director of Chess Cab, was hired in April 2000 and was first involved in an audit of maintenance and insurance expenses in July 2000. During the first audit, Conaway was cooperative and enthusiastic about effecting changes suggested by the internal auditors. However, the audit team in 2001 found Conaway distant and detached from the audit process. During a walk-through of the garage, Shawn Whealor, Mechanic Supervisor, said that Conaway was distressed about some charitable work. Further investigation revealed that Conaway had been asked to resign from the DiPalma Children’s Home Fund-Raising Committee because Conaway was often late to or didn't show up at all for fund-raising drives and meetings and because Conaway intentionally misled contributors about the number of children’s beds that were available in an effort to boost contributions.
## TASK 2A: FEASIBILITY OF EXPLANATIONS

In the planning memo excerpt you read, Chess Cab’s maintenance expenses to sales ratio is decreasing. Using your professional judgment, respond to the following seven questions regarding the feasibility of explanations for this decrease. Indicate your response by marking one circle; the farther you mark to the right, the more feasible you believe the explanation to be.

<table>
<thead>
<tr>
<th>Question</th>
<th>Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How feasible is it that the decrease in maintenance expenses relative to sales was the result of fraudulent activities on the part of Chris Conaway?</td>
<td>100%</td>
</tr>
<tr>
<td>2. How feasible is it that the decrease in maintenance expenses relative to sales was the result of fraudulent activities on the part of Terry Alexander?</td>
<td>100%</td>
</tr>
<tr>
<td>3. How feasible is it that Chris Conaway implemented new policies and procedures that led to the decrease in maintenance expenses relative to sales?</td>
<td>100%</td>
</tr>
<tr>
<td>4. How feasible is it that Terry Alexander or another member of TransportNation’s corporate management implemented new policies and procedures that led to the decrease in maintenance expenses relative to sales?</td>
<td>100%</td>
</tr>
<tr>
<td>5. How feasible is it that the decrease in maintenance expenses relative to sales is the result of an unintentional misstatement in Chess Cab’s accounting records?</td>
<td>100%</td>
</tr>
<tr>
<td>6. How feasible is it that the decrease in maintenance expenses relative to sales is the result of an unintentional misstatement in TransportNation’s accounting records?</td>
<td>100%</td>
</tr>
<tr>
<td>7. How feasible is it that factors in the external environment—those beyond the control of management—led to the decrease in maintenance expenses relative to sales?</td>
<td>100%</td>
</tr>
</tbody>
</table>
TASK 2B: LIKELIHOOD OF EXPLANATORY FACTORS
In the narrative you read, Chess Cab’s maintenance expenses to sales ratio is decreasing. The change could be driven by either a single or a combination of four factors:

1. Intentional Manipulation such as vandalism, theft, and deceit.
2. Internal Environment such as procedures and policies.
3. External Environment such as weather, declining economy, and war.
4. Misstatement such as unintentional error, transposed numbers, and misinterpretation.

In the table to the right, indicate the likelihood that the reduction in maintenance expenses relative to sales happened as a result of these four explanatory factors by distributing 100 points among the four factors. The largest number of points assigned to a factor will indicate that the factor is the most likely cause of the decrease. When the total equals 100, continue to Task 2C.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentional Manipulation</td>
<td></td>
</tr>
<tr>
<td>Internal Environment</td>
<td></td>
</tr>
<tr>
<td>External Environment</td>
<td></td>
</tr>
<tr>
<td>Misstatement</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

TASK 2C: PERSONAL QUALITIES
Six statements are presented below regarding the personal characteristics of Chris Conaway, Director of Chess Cabs. Indicate the degree to which you agree or disagree with each of the ten statements by marking the appropriate circle.

1. Chris Conaway seems to have integrity.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

2. Chris Conaway seems candid.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

3. Chris Conaway seems responsible.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

5. Chris Conaway seems well-informed.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree

6. Chris Conaway seems unintelligent.
   - Strongly Disagree
   - Disagree
   - Somewhat Disagree
   - Somewhat Agree
   - Agree
   - Strongly Agree
**TASK 2D: ADDITIONAL INFORMATION**
As an internal auditor, you gather the information you need to plan the audit. In the spaces below, list up to six additional pieces of information (not provided in the planning materials) that you would like to have before finalizing the maintenance expense audit program for Chess Cab. Your response may be in the form of a question or statement.

<table>
<thead>
<tr>
<th>one</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>two</td>
<td></td>
</tr>
<tr>
<td>three</td>
<td></td>
</tr>
<tr>
<td>four</td>
<td></td>
</tr>
<tr>
<td>five</td>
<td></td>
</tr>
<tr>
<td>six</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 3: INFORMATION ABOUT YOU

TASK 3
Please provide some information about yourself. All data collected in this research project are confidential. The results of this study will be presented in summary form; no individual information will be reported.

1. Do you hold any professional certifications? Mark all that apply:
   - [ ] CIA
   - [ ] CFE
   - [ ] CMA
   - [ ] CPA
   - [ ] CFA
   - [ ] CISA
   - [ ] Other, specify ____________________________________
   - [ ] I do not hold a professional certification.

2. Please list the degrees you hold and subject area (e.g., B.S. in Accounting):
   ___________________________________________________________________________________

3. What is your current job title?
   ___________________________________________________________________________________

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

5. For what portion of your experience as an auditor were you an internal auditor?
   ______ years ______ months

6. About how long did it take you to complete this questionnaire?
   ______ minutes

7. What is your level of experience with the audit of expenses (not necessarily vehicle maintenance expenses) as described in the tasks?
   Low
   Experience
   High

8. Please use the space below to comment on any aspect of this questionnaire.

Place your completed questionnaire in the postage-paid reply envelope and drop it in the mail.

Thank you for your participation!
APPENDIX B: RESEARCH INSTRUMENT VARIATIONS

There are multiple versions of the research instrument presented in Appendix A that result from three types of variations: (1) there are three versions related to the experimental manipulation of the variable CUE; (2) some versions were electronic instead of paper; and (3) the order of questions was randomized.

B.1. Experimental Manipulation Variations

The narrative presented in the research instrument contains an integrity cue under the heading “Client Relationships.” There are three levels of integrity in this study, and each respondent’s version contained only one level. The variations in the text used to represent this cue are presented in Table 22. Each cue contained the lead-in shown in panel A, but depending on the level of the manipulated variable, the final statements (integrity cue) were different.

B.2. Electronic Research Instruments

Many of the responses obtained for this research project were collected using electronic research instruments and email rather than mailing and returning a traditional paper instrument shown in Appendix A. The electronic instrument was created in Microsoft Excel and contained macros and buttons that emulate reading through the actual eight-page paper instrument. Notable differences are discussed below.

First, the responses in the electronic instrument are made by clicking and typing as opposed to writing. Second, the ability of the respondent to return to a task (i.e., change answers in a completed task) is removed in the electronic instrument. However, the respondents can return to the narrative in both the paper and electronic instruments.
### Table 22. Narrative versions

#### Panel A: Lead-in to integrity cue

Chris Conaway, Director of Chess Cab, was hired in April 2000 and was first involved in an audit of maintenance and insurance expenses in July 2000. During the first audit, Conaway was cooperative and enthusiastic about effecting changes suggested by the internal auditors. However, the audit team in 2001 found Conaway distant and detached from the audit process. During a walk-through of the garage, Shawn Whealor, Mechanic Supervisor, said that Conaway was distressed about some charitable work.

#### Panel B: Manipulated integrity cue

<table>
<thead>
<tr>
<th>CUE</th>
<th>Narrative text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Integrity</td>
<td>Further investigation revealed that Conaway had been asked to resign from the DiPalma Children’s Home Fund-Raising Committee because Conaway was often late to or didn't show up at all for fund-raising drives and meetings and because Conaway intentionally misled contributors about the number of children's beds that were available in an effort to boost contributions.</td>
</tr>
<tr>
<td>Medium Integrity</td>
<td>Further investigation revealed that Conaway had been asked to resign from the DiPalma Children’s Home Fund-Raising Committee because Conaway was often late to or didn't show up at all for fund-raising drives and meetings.</td>
</tr>
<tr>
<td>High Integrity</td>
<td>Further investigation revealed that Conaway lost a large contributor to the DiPalma Children’s Home when the contributor asked what percentage of the funds raised went to overhead and Conaway told him the truth.</td>
</tr>
</tbody>
</table>

Finally, there were 12 pages in the electronic instruments as opposed to eight in the paper instruments. Table 23 describes the mapping between the pages of the two instrument media.

#### B.3. Randomization of Question Order

In an attempt to avoid the effects that order of questions might have on responses, the questions in each task were randomized. In the electronic instruments, the macros that controlled movement from page to page also randomized the questions for each
Table 23. Comparison of paper and electronic instruments

<table>
<thead>
<tr>
<th>Paper Instrument</th>
<th>Electronic Instrument</th>
<th>Electronic Instrument Screen Shot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cover</td>
<td>1. Cover</td>
<td>Figure 12</td>
</tr>
<tr>
<td>2. Instructions, Consent, and Researcher Contact (^{a})</td>
<td>2. Instructions Figure 13</td>
<td>Figure 13</td>
</tr>
<tr>
<td>3. Consent</td>
<td>3. Consent Figure 14</td>
<td>Figure 14</td>
</tr>
<tr>
<td>4. Researcher Contact</td>
<td>4. Researcher Contact Figure 15</td>
<td>Figure 15</td>
</tr>
<tr>
<td>5. Section 1: Task 1</td>
<td>5. Section 1: Task 1</td>
<td>Figure 16</td>
</tr>
<tr>
<td>6. Section 2: Narrative</td>
<td>6. Section 2: Narrative Figure 17</td>
<td>Figure 17</td>
</tr>
<tr>
<td>7. Section 2: Task 2A</td>
<td>7. Section 2: Task 2A Figure 18</td>
<td>Figure 18</td>
</tr>
<tr>
<td>8. Section 2: Task 2B and Task 2C (^{b})</td>
<td>8. Section 2: Task 2B Figure 19</td>
<td>Figure 19</td>
</tr>
<tr>
<td>9. Section 2: Task 2C</td>
<td>9. Section 2: Task 2C Figure 20</td>
<td>Figure 20</td>
</tr>
<tr>
<td>10. Section 2: Task 2D</td>
<td>10. Section 2: Task 2D Figure 21</td>
<td>Figure 21</td>
</tr>
<tr>
<td>11. Section 3: Task 3 and Return Instructions (^{c})</td>
<td>11. Section 3: Task 3 Figure 22</td>
<td>Figure 22</td>
</tr>
<tr>
<td>12. Return Instructions</td>
<td>12. Return Instructions Figure 23</td>
<td>Figure 23</td>
</tr>
</tbody>
</table>

\(^{a}\) The instructions, consent, and researcher contact information were split into three pages in the electronic version. The first two were separated to ensure that the researcher gave consent separate from understanding the instructions. The respondents could view the researcher contact information at any time during completion of the survey while other pages were hidden as the respondent completed reading them.

\(^{b}\) Tasks 2B and 2C are physically short and were presented on one page on the paper instrument, but were separated on the electronic instrument.

\(^{c}\) Return instructions for the instrument were printed in a box at the bottom of the last page of the paper instrument which contained Task 3. In the electronic version, after Task 3 is completed, the return instructions are presented on a separate page.

respondent. On the paper instruments, an attempt was made to construct each instrument separately so questions could be presented in random order. However, some instruments and tasks were photocopied resulting in some respondents receiving the same order of questions. Therefore, the effect of the order of questions on responses was examined, and no effect was found; see section 4.6.
Figure 12. Electronic instrument screen shot: Cover

Figure 13. Electronic instrument screen shot: Instructions
Figure 14. Electronic instrument screen shot: Consent

Figure 15. Electronic instrument screen shot: Researcher contact
**Figure 16. Electronic instrument screen shot: Section 1, Task 1**
SECTION 2: INTERNAL AUDIT NARRATIVE AND TASKS

You are an internal auditor for TransportNation, Inc., a transportation company with several divisions including charter airlines, rail services, and a national fleet of moving vans. You have recently been assigned to the team that will audit maintenance expenses for the Chess Cab division of TransportNation. This audit is still in the planning stage. An excerpt from the planning memorandum is provided below, which you should read before proceeding to the tasks in this section. You may refer back to this memorandum while completing the tasks by clicking on the tab entitled “narrative” at the bottom of this screen.

Audit Planning Memorandum (excerpt)
TransportNation, Inc.

For our recent audit plan, maintenance expenses of Chess Cab are audited on an annual basis, budgeting more audit effort in even-numbered years. Therefore, the 2002 audit of these expenses has targeted 120 audit hours, (even though the audit was to be conducted in eight days). In the audit, which began a week from Monday. The audit program should include attention to the items discussed below.

Key Employees
The key employees that should be interviewed are Tony Alexander, CEO of TransportNation, Chris Conway, Director of Chess Cab, and Shawn Wheeler, Mechanic Supervisor.

Maintenance Expenses
During the course of the audit, pay careful attention to the recent reduction of maintenance expenses as depicted in the figure to the right. In April 2003, Tony Alexander replaced the director of Chess Cab with the specific directive to reduce these costs. As incentive, the new director's bonus in the first five years is tied to a reduction of these costs.

Client Relationships
Chris Conway, Director of Chess Cab, was hired in April 2000 and was first involved in an audit of maintenance and insurance expenses in July 2000. During the first audit, Conway was cooperative and enthusiastic about effecting changes suggested by the internal auditors. However, the audit team in 2001 found Conway distant and detached from the audit process. During a walk-through of the garage, Shawn Wheeler, Mechanic Supervisor, said that Conway was distracted about some charitable work. Further investigation revealed that Conway had been asked to resign from the Cushing Children's Home Fund-Drain Committee because Conway was often late or didn't show up at all for fund-raising events and meetings and because Conway intentionally misled contributors about the number of children's beds that were available in an effort to boost contributions.

Figure 17. Electronic instrument screen shot: Section 2, Narrative
Figure 18. Electronic instrument screen shot: Section 2, Task 2A
Figure 19. Electronic instrument screen shot: Section 2, Task 2B

Figure 20. Electronic instrument screen shot: Section 2, Task 2C
Figure 21. Electronic instrument screen shot: Section 2, Task 2D
Figure 22. Electronic instrument screen shot: Section 3, Task 3
Figure 23. Electronic instrument screen shot: Return instructions
VITA

Stephanie Falba Watson was born in East Lansing, Michigan, in 1970. She grew up in Little Rock, Arkansas, attended Little Rock Hall High School, and graduated in 1987. Watson studied accounting at Louisiana State University and was awarded a Bachelor of Science degree in accounting in May, 1991. After working in accounting for seven years in Little Rock and in Houston, Texas, she returned to Louisiana State University to pursue graduate degrees. She earned her Master of Science degree from the Department of Accounting in August, 1999, and began the doctoral program the following fall. As a graduate assistant, Watson taught Principles of Accounting, passed the Certified Internal Auditor Exam, authored and coauthored four published descriptive papers and literature reviews, and coauthored a published survey of accounting text book. She was hired by the University of Central Arkansas in Conway, Arkansas, and began teaching there in the Fall of 2003. Watson is presently a candidate for the degree of Doctor of Philosophy from the Louisiana State University Department of Accounting.