An Experimental Analysis of the Impact of Goal Orientation, Ethical Orientation, and Personality Traits on Managers' and Accountants' Abilities to Recognize Misappropriation of Assets

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

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ABSTRACT

AN EXPERIMENTAL ANALYSIS OF THE IMPACT OF GOAL ORIENTATION, ETHICAL ORIENTATION, AND PERSONALITY TRAITS ON MANAGERS' AND ACCOUNTANTS' ABILITIES TO RECOGNIZE MISAPPROPRIATION OF ASSETS

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This study examines the impact of knowledge, experience, goal orientation, ethical orientation, and personality traits on managers' and accountants' abilities to recognize misappropriation of assets. Participants included students and professionals. The student group included upper-level accounting majors and upper-level management majors. The professional group included students enrolled in an introductory accounting course for their MBA program and internal auditors from a variety of organizations. Findings in the study show that accounting students assessed the possibility that fraud was in progress at a higher level than the management students, suggesting that the accounting students acquire basic knowledge about fraud from the accounting curriculum, which improves performance. The effect of reading articles was marginally significant for assessing the possibility of fraud, showing that students who have read or who are required to read articles better identify the clues associated with employee theft.

For the professional group, the effects of academic major and fraud specific training led to identifying the possibility of employee theft at a higher level. It appears that training sessions help professionals in identifying the risk factors associated with fraudulent activity, producing benefits to organizations that far outweigh the costs. Full-time work experience was marginally significant ($p < .10$), which implies that experience tends to improve knowledge stores and enhance performance. Additionally, results showed the following for the internal auditors: (1) previous exposure to employee theft in the workplace, (2) a predominate learning goal orientation, (3) level of expertise, and (4) the personality trait of intellect were positively and significantly related to recognizing an increased possibility that misappropriation of assets may be occurring as risk factors increased.

Several findings of the additional analysis using structural equation modeling extend the audit decision making literature by showing certain factors that enhance knowledge and improve decision making as experience increases. Higher learning goal orientation scores, mediated by experience and ethical position, should lead to more accurate identification of risk factors that are commonly associated with fraudulent activity. These findings should encourage firms to draw upon the knowledge of experts as they develop expert decision aids and training sessions for internal audit departments. Organizations should also integrate actual instances of misappropriation of assets into training sessions on fraud prevention and detection while developing and improving models of training sessions and expert decision aids for unstructured, complex tasks.

CHAPTER I

INTRODUCTION

Fraud continues to be a very real concern for management of an entity, as well as for all entity stakeholders. According to the Association of Certified Fraud Examiners (ACFE), the typical organization loses 6 percent of its annual revenues to occupational fraud or an estimated $660 billion (ACFE 2004). Based on results from KPMG fraud surveys over the past decade, more is known about the incidence of fraud, the cost of these crimes, and how managers are responding to this continuing threat. Seventy-five percent of companies included in the 2003 KPMG survey reported at least one episode of fraud within their organization. This same survey indicated that misappropriation of assets (employee fraud) is the most common fraud reported by organizations with 60 percent reporting at least one employee theft in the previous 12 months.

The 2003 KPMG fraud survey also noted that managers are less confident in their ability to detect fraud and at the same time are aware that the current corporate environment might provide even more opportunities for wrong-doing. For example, managers regarded the ongoing requirements to downsize their organizations as an important factor that may contribute to the potential for fraud. In particular, when layers of middle management are eliminated so are the extra layers of protection and segregation of duties that help protect against misappropriation of assets. This is particularly troublesome since many of the organizations reported collusion among employees (and third parties) as the largest contributing factor to the increase in employee fraud. The results of the most recent PricewaterhouseCoopers Fraud Survey

(2004) indicate that 68 percent of respondents (companies) did not have a comprehensive fraud program (e.g., prevention, detection, investigation, and remediation), and 54 percent said there was not a specific functional group that was responsible for the company's fraud program. In addition, 56 percent of the individuals believed that their company had not developed or documented a specific fraud risk assessment for the organization. Almost half (44 percent) of these same respondents thought that their internal audit function had not been very well integrated into the company's prevention efforts and, in general, the company viewed fraud detection as a by-product of the internal audit process rather than a primary result.

Regulators are also concerned about the impact of financial reporting fraud and misappropriation of assets on investors, auditors, and organizations. To address this specific problem, the AICPA recently issued two Statements on Auditing Standards that directly address the issue of auditors' responsibility with respect to fraud; the SEC adopted Rule 13a-14 and 15d-14 that requires CEOs and CFOs to certify the adequacy of an organizations internal control structure; and President Bush signed into law the Sarbanes-Oxley Act of 2002.

The first of the AICPA statements to address the problem of fraudulent activity is Statement on Auditing Standards (SAS) No. 82, *Consideration of Fraud in a Financial Statement Audit*, which superceded SAS No. 53 that was released in 1988 (AICPA 1997). The second is SAS No. 99, *Consideration of Fraud in a Financial Statement Audit.* These statements were issued to help define the auditor's responsibility to detect fraud. The statements also identify a significant number of risk factors that auditors should

address when conducting an audit. Indeed, these same risk factors should also be very helpful to entity personnel in the detection of misappropriation of assets.

SAS 82 identified two types of misstatements that are important to the auditor's consideration of fraud in a financial statement audit (AICPA 1997): (1) fraudulent financial reporting, identified as intentional misstatements or omissions of amounts or disclosures in financial statements to deceive financial statement users, and (2) misappropriation of assets, defined as theft of an organization's assets committed by employees. According to SAS 82, the auditor should inquire of management about the risk of fraud and whether any fraudulent acts have occurred within the organization during the period for which the entity is being audited. If the entity has a fraud detection program, the auditor's inquiry should include asking if any fraud risk factors have been detected.

SAS 99 requires the auditor to ask more questions and gather more evidence to assess fraud risks than under SAS 82. Specifically, the following changes were implemented with the adoption of the new standard: (1) A brainstorming session is required among the audit team members to discuss the potential for material misstatement due to fraud. (2) Auditors must place an increased emphasis on inquiry as an audit procedure to increase the likelihood of detecting fraud. (3) Auditors must expand their use of analytical procedures to gather information that will help identify the risk of fraud. (4) Auditors must consider other information, such as client acceptance and retention procedures, during the information-gathering phase (AICPA 2002). On every audit engagement, the audit firm determines whether to accept new clients or retain previous clients based on the risks associated with the audit. Generally, audit firms have detailed

checklist and other internal processes to aid in the decision making process. Two of the most important factors that are considered in the decision are the health of the organization and the quality of the corporate governance.

Within an entity, both managers and internal auditors play important roles in the prevention and detection of fraudulent activity. In the introduction of SAS 82, the AICPA indicated management's responsibility to prevent and detect fraud. Senior management acknowledges its responsibility to the independent auditor through the Client (or Management) Representation Letter, which confirms the oral representations that management has made to the auditor during the audit. However, managers at all levels of the organization should bear responsibility for the prevention and detection of fraudulent activity.

Internal auditors also play a key role in the prevention and detection of misappropriation of assets. While management is responsible for a strong system of internal controls, internal auditors conduct operational audits within the organization to help determine the efficiency and effectiveness of operations and internal controls. When external auditors examine and assess the internal controls of an organization, Turner (2003) recommends they ask the following questions: What is the degree of separation of duties? Do manual entries exist? Who controls the payments? How might someone commit fraud in this company? When an organization has strong internal controls, strong management support for ethical behavior, and an environment of open, honest communications, employee misbehavior should be more apparent to fellow employees.

If management, internal auditors, and other entity employees are to help prevent and detect misappropriation of assets, they must be able to recognize the clues that are

normally associated with this type of employee wrong-doing and be able to link them as soon as possible to limit the vulnerability of the organization. Hence, the purpose of this study is to examine a number of factors that might help explain the abilities of managers and accountants to recognize certain risk factors that are frequently associated with misappropriation of entity assets.

According to Robertson (1997), purchase-related fraud probably represents the largest fraud risk to most organizations, and the most likely schemes are: fictitious invoices, excess purchasing, over-billing, checks payable to employees, and duplicate payments. For the purpose of this study, an actual case of misappropriation of assets (purchase-related fraud), is used to examine managers' and accountants' abilities to recognize the various clues that were available to the individuals in the particular governmental entity where the fraud occurred. In the actual event, a government employee generated a number of fictitious invoices for the benefit of her husband's business. However, her husband's business provided no services to the governmental entity, was not an approved vendor for the city government, and he had no knowledge of the fraud. She committed the misappropriation by herself.

The present study is based in the expert-novice paradigm and examines the impact of certain variables upon professionals (experts) and students (novices) abilities to recognize misappropriation of assets. From the extant literature on auditing expertise and judgment (performance), task-specific knowledge and experience should be a valuable asset to an individual when confronted with a situation where employee wrong-doing may be in progress. As a benchmark, each individual's knowledge and experience will be examined to validate the explanatory value of these variables as they relate to the task.

Research in psychology and other disciplines suggests that additional variables may be useful in the present context: an individual's goal orientation, ethical orientation, and certain personality traits. These variables have been examined in a variety of different contexts, using diverse groups of participants to examine their effect on performance. In particular, the extant literature on goal orientation, ethical orientation, and personality traits suggests that these factors might provide additional, valuable insights regarding a manager's or an accountant's ability to recognize fraudulent activity within an organization.

Indeed, detecting fraudulent activity within an organization is a very difficult task because it is "...a crime shrouded in ambiguity, and is sometimes difficult even to determine whether or not a crime has actually been committed" (Albrecht 1996, p.26). Thus, fraud detection is considered an unstructured task. While many accounting tasks are structured, it is frequently the unstructured ones that are the most challenging. In general, the topic of performance in unstructured tasks is important to accounting academics and to accounting professionals. The Accounting Education Change Commission and the large accounting firms all agree that successful accountants must be able to deal with unstructured problems (Davidson et al. 2000). Colbert (1989) maintains that experience is essential for unstructured decisions, which implies that novices must devote a considerable amount of attention to these tasks to develop proficiency. Hence, the purpose of this study is to examine the impact of knowledge, experience, goal orientation, ethical orientation, and personality traits upon managers' and accountants' abilities to recognize misappropriation of assets using an unstructured task.

The remainder of this dissertation is organized as follows. Chapter II reviews the literature on expertise, goal orientation, ethical orientation, and personality traits. The research methodology, research hypotheses, and experimental design are presented in Chapter III. Results and discussion of the data analyses are provided in Chapter IV. The concluding chapter identifies the contributions of this research, the limitations associated with this study, and offers suggestions for future research.

CHAPTER II

REVIEW OF THE LITERATURE

Determinants of Expertise and Judgment (Performance)

Expertise, as it relates to performance, has been studied in the psychology literature for many decades. The extant literature suggests that the manner in which individuals organize, represent, and interpret domain knowledge distinguishes experts from novices. One of the early studies of expertise was De Groot's (1965) examination of world-class chess players. The chess players were asked to think aloud as they pondered their next move. De Groot concluded that prior experience allowed the world-class players to develop pattern recognition capabilities and strategies that helped them perform better than individuals with less experience.

De Groot's (1965) results are supported by subsequent studies in other disciplines such as physics, computer programming, mathematics, electronics, and radiology (e.g., Robinson and Hayes 1978, Egan and Schwartz 1979, Ehrlich and Soloway 1984, Chi et al. 1988, Lesgold 1988). In each of these studies, the researchers observed that experts were able to develop complex pattern recognition techniques. Chi et al.'s (1981) study of physics' experts and novices showed that novices mainly store lists of facts and formulas about the domain, but experts organize domain knowledge around core concepts that enable rapid and accurate retrieval of information. Glaser and Chi (1988) identified several attributes of experts. They excel in their specific domain, have complex pattern recognition techniques, are capable of deeper problem representation, solve problems more quickly, and have superior short and long term memory.

The medical literature uses the expert-novice paradigm to explain performance and decision making differences. These studies focus on the cognitive processes of experts and individuals with limited experience, and the impact these differences have on diagnosis and treatment decisions. While these studies are very informative, Willson (1990, 1994) suggests that the development of expertise should be examined as a process of gaining an acceptable level of competence. Rather than thinking of only two groups of individuals (experts and novices) who are at opposite ends of a continuum, researchers should consider intermediate levels of development. Hence, Willson and other medical researchers report a number of studies that include intermediate levels of participants to examine the progression of expert decision making by doctors (e.g., Schmidt and Boshuizen 1993a and 1993b, Rickers et al. 2000, van de Wiel et al. 2000).

When making a routine diagnosis, physicians use knowledge structures that are very different from interns and medical students (Schmidt and Boshuizen 1993a). These knowledge structures are the result of repeated interactions with patients over an extended period of time. Novices (medical students) obtain a large body of medical knowledge from their coursework but have not had much exposure to patients and their medical problems. Eventually, these medical students reach the stage in their education where they are placed in clinical settings and are exposed to patients' problems. Through repeated exposure to patients, students start to develop knowledge structures for various patient illnesses, but they are not yet as comprehensive as those of the physicians (experts).

Patel and Groen (1991) discovered that third and fourth year medical interns (in the intermediate stage of expertise development) recalled more details about a patient's

case than novices or physicians. These researchers identified this finding as an "intermediate effect" and believe this result suggests that a predictable progression occurs when individuals are building a knowledge base. Experts do not memorize the facts surrounding each patient case. However, interns who are not yet capable of the same pattern matching process as experts, memorize symptoms to correctly make a diagnosis. Memorization of symptoms that characterize a specific diagnosis (novice) and repeated exposure to patient complaints (intermediate levels) eventually lead to knowledge stores that are used by experts for analysis and categorization (Schmidt and Boshuizen 1993a).

Accounting researchers have primarily used the novice-expert paradigm to identify essential determinants of expertise in an auditing context. This research identifies two approaches that have been used to study auditor performance (behavioral and cognitive). The behavioral research is based on Einhorn's (1974) work that identified experts as those who: (1) tend to cluster variables in the same way when they identify and organize cues, (2) exhibit high intra-judgment reliability, and (3) weight and combine cues similarly. In general, this point of view focuses on the experts' judgment performance, anticipating that their judgments will exhibit consensus. However, no systematic results have been reported from this stream of behavioral research (Bédard 1989). That is, the expert auditors' behavior (performance) did not significantly differ from the behavior of the novice auditors.

At the same time, another body of auditing research developed based on the cognitive approach. The premise of this research is that individuals have integrated knowledge and store similar information together (schema). Gagne et al. (1993) explain that a schematic framework helps individuals make inferences and solve problems, and

the quality of the inferences and problem solutions rely more on domain-specific knowledge and strategies than on general processing ability. In addition, these authors believe that expertise in a domain takes both time and practice to acquire.

As early as 1983, accounting researchers were encouraged to focus on knowledge, environment, and motivation as determinants of judgment performance in accounting settings (Libby 1983). Heeding this advice, accounting researchers studied the impact of experience, knowledge, and ability on accountant's judgment and decision making performance, using the expert-novice paradigm. Novices were variously described as students, auditors with fewer years of experiences, or professionals who did not have experience in completing the specific task that was used in the experiment. Experts were defined as individuals with more years of experience or those professionals who have sufficient domain knowledge to complete the task (Colbert 1989, Tubbs 1992).

Libby and Frederick (1990) used experienced and inexperienced auditors to investigate how experience-related differences of financial statement errors might contribute to the effectiveness and efficiency of audit decisions. The participants were 61 new audit managers, 65 audit staff members, and 70 senior-level auditing students. All were told to assume the role of audit supervisor for a new client. The participants were given three financial ratios and told the difference in the ratios could be normal variation or a material error in the unaudited current year statements. The participants were asked to list the material errors that could have caused the variation in the ratios. The experienced auditors, with more knowledge of financial statement errors and error occurrence rates, were able to list more possible causes of variation in the ratios. Similarly, Bonner and Lewis' (1990) results suggest that general experience is not an

accurate predictor of task success and that task-specific expertise should be used as a measure of expertise.

Ashton's (1991) two studies examined both experience and knowledge as determinants of expertise. The experiment tested auditor's knowledge of error frequencies in financial statements and the causes of these errors. The findings revealed that even the most experienced auditors had (1) limited exposure to financial statement errors and (2) prior knowledge of only the most common financial statement errors and how those errors impact the financial statements. The difference in knowledge levels was not explained by industry-specific audit experience, years of auditing experience, or by the number of clients the auditor had audited. These results suggest that audit experience should be task specific for expertise to impact performance.

Frederick (1991) examined how inexperienced and experienced auditors mentally represent knowledge of internal controls. A second purpose of the study was to investigate knowledge organization and determine if the organization of knowledge affected recall of internal control procedures. The participants in this study were 113 auditors and 97 auditing students. The auditors recalled more internal control procedures than the auditing students. In addition, the auditors recalled more internal control procedures from the schematic organization (information flowcharts) than the taxonomic organization (categorical checklist). This suggests that task performance is affected by knowledge organization as well as level of experience.

Tubbs (1992) designed two tasks to examine the effect of experience on an auditor's knowledge of errors and irregularities. The participants in his study were students currently enrolled in an introductory auditing class and practicing auditors. The

results suggest that subjects with greater auditing experience recall more errors, are more accurate about the errors they identify, and recall more atypical errors. Tubbs concludes that this information may be used to train new auditors, to better assign auditors to tasks, and to develop decision aids or expert systems in auditing.

The goal of Libby and Luft (1993) was to trace the development of experimental research (in audit contexts) regarding the role of knowledge, motivation, and environment on auditors' performance. The authors make several observations based on studies that have used the expertise paradigm. First, the role of knowledge has been more thoroughly investigated than the other determinants of performance, and the consensus is that knowledge should be task-specific. Second, specific training programs and experiences provide a basis for acquiring domain knowledge. Third, Libby and Luft propose a revised model of performance where experience and ability contribute to knowledge, which impacts performance. In this model, ability also has a direct impact on performance.

Choo (1996) used a cognitive script approach to study the relationship between knowledge structure and auditor performance. The participants were auditors from two CPA firms. In each experiment, the auditors were asked to determine the probability of the company continuing as a going concern. The results suggest that repeated exposure to organizations that exhibited going-concern problems is a suitable proxy for experience in this setting. The findings also supported prior studies that found inexperienced auditors gain experience by repeated exposure to specific tasks.

Tan and Libby (1997) test knowledge and experience as determinants of performance using actual performance evaluations to classify experts. The authors

noticed that nontechnical skills were an important part of the actual performance evaluations at the manager level, but this information was not taken into account in laboratory experiments. The authors conclude that the knowledge construct used in research should be expanded to include tacit managerial knowledge (knowledge not directly taught in school). Their findings suggest that the difference in tacit managerial knowledge at all levels is due to knowledge that has been gained through experience. The results of the study have implications for training and promotion by identifying other factors of successful performance beyond technical skills. According to this study, successful auditors at the manager and partner level need the ability to acquire tacit managerial knowledge from experience. The authors also suggest that a personality trait might exist that enhances an auditors ability to learn from experience and ultimately affect performance.

Bonner et al.'s (1997) premise was that inexperienced auditors lack knowledge of basic auditing concepts (transaction cycles, auditing objectives) when they enter the auditing profession. The authors designed an experiment to test this idea, using accounting and MBA students. The participants took a pretest on basic auditing concepts, received instruction on transaction cycles or audit objectives, performed a distracter task, and then completed a post-test. Several days later, the students repeated the post-test, observed presentations on financial statement errors, performed a distracter task, and then completed knowledge tests and an exit questionnaire. The design of the experiment was to test if intensive instruction before acquiring auditing field experience improved audit decision making (performance). The results suggest that the benefit of instruction prior to auditors obtaining experience cannot be duplicated and that an experienced auditor's

decision making is improved when instruction is acquired prior to experience. The authors contend that the timing of instruction for auditors is important, and these findings can be useful to university professors and corporate trainers.

As the auditing profession requires more specialized industry knowledge, researchers have begun studying the way in which auditors acquire this knowledge. Solomon et al. (1999) define industry specialists as auditors who are designated as such by their firm, attend training classes, and audit predominantly in one industry. Two experiments were used to test the industry specialist's knowledge of financial statement errors and nonerrors. The results show that industry specific training and experience have more impact on nonerror knowledge than financial statement error knowledge.

Trotman (1998) developed a taxonomy of judgment and decision making studies that have been published in the auditing literature, and then identified several avenues for future research. First, he suggested additional studies on the interaction of the determinants of performance (including knowledge and experience). Second, he encouraged comparison of performance measures used in laboratory studies to specific criteria (e.g., actual measures used by auditing firms) to validate accuracy. Also, Trotman believed that longitudinal studies would be beneficial to auditing judgment research.

Assertion-level inherent risk assessment is an important step in rendering an audit opinion. Taylor (2000) examines an auditor's industry specialization to determine the affects on assertion-level inherent risk assessments. The audit case about a hypothetical banking client was mailed to experienced banking audit specialists and experienced non-banking audit specialists to assess inherent risks of material misstatements for two financial statement accounts (loans receivable, and property and equipment). The

prediction was that the difference between the banking and non-banking auditors' assessments would be larger for the industry specific account than the non-industry specific account. The prediction was based on the fact that the banking auditors had prior experience in assessing inherent risk for the loans receivable account which leads to more accurate performance. From the 187 usable responses that were received, nonbanking specialists assessed inherent risk significantly higher than the banking specialists on all but one of the assertions for the loans receivable account. Consistent with Solomon et al. (1999), the findings suggest that industry experience aids expert development and that general experience is not indicative of successful audit judgments.

Apostolou et al. (2001) asked 140 auditors to rate the relative importance of the 25 risk factors in Statement on Auditing Standards (SAS) No. 82. The findings of this study show that the following three red flags were judged as the most important by the study's participants: management characteristics, influence over the control environment, and operating and financial stability characteristics. These findings were almost identical across the three types of auditors used in the study (Big 5, regional/local, and internal auditors). These findings suggest that auditors should focus more attention on the red flags of management characteristics and influence over the control environment. However, future studies should use actual audit workpapers to document the presence or absence of red flags, coupled with an assessment of the likelihood of management fraud.

An area of significant risk for auditors is assessing the amount of a financial institution's uncollectible portion of their loan portfolio. Wright (2001) examined the impact of task specific experience on the auditor's loan judgments (performance). The 86 financial institution auditors who participated in the experiment had various levels of

experience (seniors, managers, and junior partners). The semi-structured, complex task required the participants to assess the percentage of a loan that would be collected in the upcoming year. The results suggest that there is continued improvement in judgment performance as auditors advance in their career. In this study, managers made more accurate assessments than seniors, and junior partners outperformed managers. Judgment consensus also increased as the auditor's level of experience increased. While other studies have shown experience should be task specific at least until the auditor reaches the senior level, this finding implies that task specific experience aids expertise development and improved performance at all stages of the auditor's career.

Vera-Munoz et al. (2001) used a two-stage task to examine the effect of experience and task presentation format on performance. The purpose of this study was to investigate the types of knowledge needed to provide high-quality advice (e.g., advisory services). The participants were individuals with at least two years of accounting experience (both public accounting and management accounting). The results for Stage One suggest that broad accounting experience helps an individual to develop and access an appropriate knowledge structure to enhance performance while the results from Stage Two suggest that accountants need specific domain experience for maximum performance.

Auditing is considered a complex, unstructured task and the extant literature has shown that performance decreases as task complexity increases (Simnett and Trotman 1989, Simnett 1996). In 2002, Tan et al. examined the impact of task complexity on audit performance using knowledge and accountability as moderating variables. Specifically, the authors wanted to determine conditions where task complexity adversely

affects auditor judgment. The 105 Big 6 auditor participants completed general knowledge and problem solving ability tests and performed three audit judgments of varying complexity. The auditors were then divided into two groups to assess motivation using an accountability manipulation. Half of the participants were told that their responses would be reviewed by a superior, the other group was told their responses would be anonymous. The results showed that for task complexity not to adversely impact performance, auditors need the appropriate amount of task specific knowledge and motivational level. If both of these criteria are not present, then knowledge or motivation alone may not be sufficient to overcome the adversarial effect of task complexity.

Bedard and Graham (2002) studied whether auditors' recognition of risk factors and the planning of certain audit tests are influenced by decision aid orientation. Findings showed that the identification of risks factors is an important factor that influences an auditor's decision to plan substantive tests. The results also suggest that the more involvement the auditor has with a client, the better the auditor is at identifying risks factors. However, auditor rank and years of experience were not associated with an increased ability to identify risk factors. Bedard and Graham emphasized the importance of risk factor identification in order for auditors to address the potential consequences of weakness in organization, staff, training, or administration in the client company.

In previous studies, knowledge has been shown as a determinant of expertise. The question can be asked if certain types of task specific knowledge can be transferred across industries and how this impacts auditor performance. Thibodeau (2003) tested this question using 60 in-charge auditors that specialized in the financial services and

manufacturing industries. The participants completed a two phase experiment. In Phase One, the in-charge auditors were asked to evaluate the collectibility of a commercial loan; while in Phase Two, the participants assessed the financial health of four companies, two from the manufacturing industry and two from the casino gambling industry. The auditors that evaluated the collectibility of the loan with more accuracy had superior performance in evaluating the going concern status of the four companies without regard to the financial stability and industry context of the company. These findings suggest that task specific knowledge gained in one industry can be transferred to other tasks and industries.

Lenard (2003) used an expert system to study the impact on students' knowledge and use of internal controls in the audit planning process. Undergraduate students from a management accounting class were divided into three groups and performed a three phase experiment. In Phase One, the first group used an expert system that provided a series of situations where the user made an internal control assessment. After the assessment by the student, the expert system gave students feedback regarding internal controls and supplied detailed explanations. The second group used a similar system but detailed explanations were not given, while the third group completed the assessment manually. Phase Two involved similar testing while in Phase Three all participants completed the assessments manually. The results showed that the students performed better with repetitive testing and from the use of expert systems that provide detailed explanations. The results also revealed that students can acquire declarative knowledge in a semester with the aid of expert systems. This finding suggests that novice auditors can increase domain knowledge with the use of expert systems.

Ashton (1999) opines on the development of the expertise paradigm in accounting research and encourages accounting researchers to enrich this paradigm by including the personality trait of conscientiousness in future research studies. In this same paper, Ashton notes that the dependent variable in the expertise paradigm is performance. The goal of this research stream is to develop superior performance or expertise. Thus, Ashton encourages accounting researchers to explicitly include learning goal orientation and performance goal orientation into the expertise paradigm of accounting research.

Goal Orientation

According to Dweck (1986), most of the extant research on effective learning and task performance focuses on the specific skills and abilities an individual must acquire to perform a particular task successfully. This view focuses on the physical requirements one must have (or acquire) to perform the task. Dweck maintains that the stream of research on motivation provides factors, other than physical ability, that might influence whether an individual develops a skill. In particular, Dweck notes that motivational processes might affect: (1) how well individuals *use* existing skills and knowledge; (2) how well individuals *acquire* new skills and knowledge; and (3) how well individuals *transfer* these new skills and knowledge to novel situations.

The motivational stream of research focuses on a social-cognitive approach to task performance, and identifies adaptive and maladaptive motivational patterns of achievement that impact the goal-oriented activity of individuals. In particular, two types of goal-oriented behavior have emerged from this research: learning goal orientation and performance goal orientation. Individuals who are learning goal oriented prefer learning new skills and mastering new tasks. These individuals evaluate task performance relative

to other tasks they have completed and measure success against their prior achievements. They welcome complex tasks and set challenging goals despite their level of ability.

On the other hand, performance goal oriented individuals want others to perceive them as competent in all tasks and view negative feedback as a failure rather than a valuable learning tool. These individuals evaluate success relative to other individuals' accomplishments rather than to their own prior accomplishments. Performance goal oriented individuals often make excuses for low performance and frequently choose tasks that are easy for them to perform so that they can be assured of success, even if this choice causes them to miss an important learning opportunity.

An individual's goal orientation also tends to influence the amount of effort they expend on any particular task. Effort and persistence are associated with the learning goal orientation and feedback, positive or negative, is viewed as a learning tool. If a performance oriented individual experiences difficulty with a certain task, the individual often becomes distracted and shows decreased effort which generally leads to task failure. Learning and performance goal orientations are generally viewed as dichotomous dimensions rather than a continuum (Roedel et al. 1994, Button et al. 1996, VandeWalle 1997, Fisher and Ford 1998).

Following Dweck's (1986) explication of how goals might impact an individual's reaction to success or failure, as well as the quality of performance, a host of researchers began to examine goal orientation in a variety of different contexts, with various types of subjects. King and Williams (1997) examine the impact of goal orientation on ability and success in learning martial arts. Sixty-eight community college students completed the Task and Ego Orientation in Sports Questionnaire. Students with a learning goal

orientation believed effort and enjoyment produce success in martial arts, while performance goal oriented students thought external factors and superior ability produce success in the sport.

Phillips and Gully (1997) developed and tested a model that examines the effect of goal setting, self-efficacy, and personality traits on performance. Participants in this study include 405 undergraduate students who completed instruments to measure their goal orientation (developed by Button et al. 1996), self-efficacy (by Bandura 1991), and need for achievement. Performance was measured by exam scores for the course. Results indicate that learning goal orientation positively impacted self-efficacy, and self-efficacy leads to higher self-set goals and higher performance (exam scores). Alternatively, performance goal orientation was negatively associated with self-efficacy.

Examining the effects of self-efficacy and goal orientation on an individual's learning ability, Stevens and Gist (1997) recruited 60 MBA students to participate in their study. The students were given salary negotiation training and then engaged in a practice session on salary negotiations. This session was followed by a goal oriented training session. A week later, the students participated in a second salary negotiation practice session. The researchers found the learning goal oriented MBAs used more effort and responded more favorably to training than the performance oriented MBAs.

Fisher and Ford (1998) studied the relationship between goal orientation of learners and the amount of effort spent on learning a task. Undergraduate students from Michigan State University were asked to perform an unfamiliar task (multiple regression techniques). Students were asked to study the method used by investment analysts to make stock price predictions, and then to learn how these analysts use multiple regression

to predict stock prices. Two learning outcomes (knowledge and application) were assessed. Goal orientation was measured using the scale developed by Button et al. (1996). Regression analysis was used to determine the relationship of goal orientation on the amount and type of effort. Learning goal oriented individuals used increased effort and used more complex learning strategies than performance goal oriented individuals. Performance orientation was associated with less effort and fewer complex learning strategies.

Colquitt and Simmering (1998) note that the workplace continues to demand workers to complete more and more complex tasks. This suggests that employers may increase their emphasis on training. Accordingly, these authors examine goal orientation and conscientiousness as predictors of an individual's motivation to learn. Undergraduate students were enrolled in a 6-week course that served as the learning program. Exams (performance feedback) were given at the midpoint and end of the course. The feedback served as the learning measure. Learning orientation and conscientiousness were positively associated with motivation to learn which suggests that learners with these traits had higher motivation throughout the learning process. The individuals that possessed these traits were 30 percent more likely to perform well on the first exam and 28 percent more likely to perform well on the final exam. In contrast, performance orientation was negatively associated with motivation to learn.

VandeWalle et al. (1999) studied the impact of goal orientation on performance of 158 salespeople in a longitudinal field study. An important finding of their study is that successful job performance takes more than just the desire to appear successful. The person must actually develop the skills that are necessary for success. In particular, the

data revealed that a learning goal orientation led to higher sales performance, but a performance goal orientation was not associated with sales performance.

Brett and VandeWalle (1999) examine goal orientation within the context of a complex skill-training program. This study included 262 MBA students who were in a 2-day training program to improve their presentation skills. These researchers found that learning goal orientation had a positive relationship with skill improvement goals to develop new presentation skills. However, performance goal orientation was significantly related to positive comparison goals, that is, to present better than colleagues.

Johnson et al. (2000) conducted two studies using a computerized class scheduling task to test goal orientation and task demand effects on motivation. Goal orientation was manipulated in both studies to make participants believe either ability was stable and could not be improved through effort (performance orientation) or ability was changeable and effort resulted in improved task performance (learning orientation).

The results of the first study indicate that participants with a performance goal orientation were more satisfied and performed better on a simple task than learning goal oriented participants. In Johnson et al.'s (2000) second study, task consistency is manipulated by changing the task rules for some participants. As predicted, learning goal orientated participants used higher levels of motivation on the inconsistent task. Performance goal oriented participants reported higher levels of self efficacy on the consistent task. This research contributes to the literature by showing certain conditions (simple or consistent task) under which a performance goal orientation is more beneficial than a learning goal orientation in skill development.

Bell and Kozlowski (2002) extend the goal orientation literature by testing the direct association of goal orientation with performance, using 125 undergraduate students who participated in a computerized radar simulation. Consistent with previous studies, learning orientation was positively associated with performance, and performance orientation was negatively associated with performance. The results of the study support the adaptive nature of learning orientation and the maladaptive nature of performance orientation.

In Potosky and Ramakrishna (2002), 163 information system (IS) professionals participated in a field study to examine the effect of goal orientation on overall job performance. Goal orientation was measured using the instrument developed in Button et al. (1996), and performance was quantified through previous supervisor ratings. The results showed that in a supportive organizational environment, learning goal orientation had a significant positive relationship with self efficacy which positively impacted overall job performance. Consistent with prior studies, a negative relationship was observed between performance goal orientation, self efficacy, and performance. The findings suggest that even though employees exhibit a learning goal orientation, the organization environment may have an impact on successful task performance.

The relationship between job fatigue and goal orientation are examined in Van Preen and Janseen (2002). The study included 322 university employees. The researchers found that goal orientation moderates both job demands and fatigue. Individuals who show high learning goal orientation are less affected by job stress and fatigue, and hence, are less likely to be dissatisfied with their job and are more likely to feel satisfaction after accomplishing stressful tasks. Individuals with stronger performance goal orientation

were more affected by job stress and fatigue, which resulted in a high degree of job dissatisfaction and ultimately lower performance.

Schmidt and Ford's (2003) study focuses on reflective learners, i.e., those who accurately and frequently assess their progression of knowledge in a predominantly self-based training program. These authors believed self-reflective learners should be more successful than individuals who do not reflect on their learning. After a brief discussion on metacognition, students from a Midwestern university participated in a learner-controlled computerized web-page design training program. Learning goal orientation was positively associated with trainees who reported that they intently followed their learning.

In Morris et al. (2003), the relationship between goal orientation and coping style among traditional and nontraditional college students is examined. The researchers hypothesize that a learning goal orientation increases a person's effort to solve a problem and their desire to increase their competence at a job. Learning goal orientation is also thought to increase a person's perseverance in solving a difficult task. Performance goal orientation, on the other hand, concentrates on the outcome in order to avoid negative feedback. This orientation has been shown to result in lower levels of perseverance and more negative outcomes. The findings of this study show that nontraditional students more often exhibit learning goal orientations and used task-oriented coping, therefore, achieving higher grade point averages than the traditional-age college student. Their results also show that the use of learning goal orientation increases as age increases. The researchers surmise that older students are more likely to focus on learning for its own

sake, while younger, traditional-age college students focus on performance to reach their immediate goal of attaining a college degree.

Heintz and Steele-Johnson (2004) examine goal orientation and performance within the context of need for achievement, intrinsic motivation, self-consciousness, locus of control, need for dominance, social desirability, and self-esteem. They found a significant relationship between learning goal orientation and the constructs that address competence: need for achievement, intrinsic motivation, and private self-consciousness. There was also an association between learning goal orientation and two constructs that address control: locus of control and dominance. For performance goal orientation, there was a significant relationship with social desirability and public self-consciousness. Their study showed that learning goal orientation is related to competence and control, while performance goal orientation is related to a favorable evaluation.

Janssen and Van Yperen (2004) suggest that learning goal oriented individuals are more effective on the job because they create higher quality relationships with their supervisors. The authors surveyed 170 employees of a Dutch energy supplier to study the association between goal orientation, superior-subordinate relationships, outcome of job performance, and job satisfaction. The authors found that learning orientation was positively associated with leader-member exchange, in-role job performance, innovative job performance, and job satisfaction. Performance orientation was negatively associated with in-role job performance and unrelated to job performance. Further, performance orientation had a negative relationship with job satisfaction and leader-member exchanges. These findings suggest that learning goal oriented individuals are more successful on the job because they establish more beneficial relationships with their

supervisors while performance oriented individuals lack the skills to develop these relationships.

Zweig and Webster (2004) study the relationship between goal orientation and the Big Five personality measures for 786 students, using structural equation modeling (SEM) techniques. The hypothesized model was compared to a model where the five factors of personality were unrelated to goal orientation. Findings suggest that there are significant relationships between most personality factors and goal orientation, predicting the types of activities in which a person will engage. Further, the results suggest that personality traits and performance intentions are mediated by goal orientation.

Seijts et al. (2004) use a complex business task to test goal orientation on performance. Sixty-nine business school students completed a computer simulation game based on events from the mobile telephone industry to link strategic decisions with performance outcomes. The results demonstrate that goal setting satisfies the relationship between an individual's goal orientation and performance, regardless of the type of goal set. The exception occurred between learning goal orientation and performance when a specific learning goal was set. Upon completion of the task, the students were asked to complete the goal orientation inventory a second time. This was done to determine if a specific goal would affect the student's goal orientation. The findings suggest that goal orientation is a stable trait that affects performance.

Ethical Orientation

In 1979, the AACSB made ethics instruction a requirement for all students in business education programs, and in a recent report, *Ethics Education in Business Schools* (2004), the AACSB encourages schools of business to renew and reinvigorate

their commitment to ethics in business education. Based on the widely-reported accounting scandals in a number of large corporations over the past several years, ethics instruction and ethics research in accounting have become even more important than in the past.

The Defining Issues Test (DIT) is probably the most commonly used tool that researchers have employed to examine the ethical reasoning of accountants. The DIT, developed by Rest (1979), is based on Kohlberg's (1984) hierarchy of moral development. This hierarchy forms the basis from which individuals formulate decisions about moral issues. The measure generated by the DIT is called the "P" score. This score represents the participant's percentage of responses that relate to postconventional reasoning. A higher P score suggests a higher level of ethical development.

Ponemon's (1993) study found a quadratic relationship between the P score and the ethical behavior of senior-level undergraduate accounting students and graduate-level accounting students. These results imply that the behavior of participants with low and high scores would be more unethical than participants with median P scores. A more basic issue is that a quadratic relationship violates one of the basic theoretical propositions of Kohlberg's theory (that a linear relationship exists between P scores and ethical behavior). Ponemon (1995) also used the DIT to examine accountants' objectivity when serving as litigation specialists and expert witnesses on legal cases. The participants in this study were 101 accountants in litigation support (domain experts) and 106 accountants in auditing (domain sub-experts). The results suggest that domain-specific experience coupled with ethical reasoning reduces the extent of bias in litigation support judgment.

Tsui and Gul (1996) used the DIT to study the interaction effects of locus of control, a personality variable, and ethical reasoning on the behavior of auditors in an audit conflict situation. Eighty experienced auditors were presented a case study and asked to opine on the extent to which they would accede to the client's request in the particular situation. The results suggest that the explicit recognition of both locus of control and ethical reasoning provides a better explanation for differences in auditors' ethical decision making.

Tsui (1996) studied the effect of cultural differences on moral reasoning. In particular, the author examines the relationship between ethical reasoning and ethical behavior of Hong Kong auditors and US auditors within the context of an audit conflict situation. The participants in this study included 50 auditors who were either partners or managers. The results indicate that the higher the level of ethical reasoning, the lower the likelihood that the auditor would "give in" to the client's request. Thus, higher levels of ethical reasoning were associated with more independent behavior.

In other studies using the DIT, accounting researchers studied the impact of self interest and moral reasoning (Allen and Ng 2001), the impact of insider stock trading and moral reasoning (Abdolmohammadi and Sultan 2002), the impact of decision style and moral development of managers (Pennino 2002), and the impact of cheating and moral reasoning (Bernardi and LaCross 2004). Most of the studies that used the DIT to measure the moral judgment abilities of accounting students and accounting professionals found that the moral judgment abilities of these individuals were not as advanced as the general population (Ponemon and Gabhart 1994, Fisher and Ott 1995, Sweeney 1995).

These results caused a number of accounting researchers to question the value of the DIT as it pertains to accountants (e.g., Fisher and Sweeney 1998, Jeffrey and Ravenscroft 2000, Bay and Greenberg 2001, Bay 2002). Fisher and Sweeney (1998) tested the validity of the DIT as an unbiased measure of moral judgment by using undergraduate accounting students. The students were separated into groups based on political ideology and asked to complete the DIT from their own perspectives and then from an either "extremely liberal" or "extremely conservative" role. The participants decreased their P score when completing the DIT from an "extremely conservative" perspective but increased their P score when using the "extremely liberal" perspective. Jeffrey and Ravenscroft (2000) note that an individual's attitude toward rules and the impact of rules on moral development may explain the inconsistencies in previous research involving the relationship between accounting majors' P scores and their level of ethical development.

Bay and Greenberg (2001) replicated Ponemon's (1993) study using 45 undergraduate business students and also found a quadratic relationship between the DIT score and ethical behavior. This finding was gender-specific. In particular, the male participants had a quadratic relationship between their P score and ethical behavior while the females had a marginally significant and positive linear relationship. Bay and Greenberg conclude that these findings suggest that (1) ethical reasoning is based on principles other than justice, or (2) ethical intent does not translate into ethical actions.

Bay (2002) questioned the use of the DIT in accounting ethics research for several reasons. First, accounting researchers use the DIT as a measure of Kohlberg's theory without discussing the differences in the underlying theory and the measure. This calls

into question the inferences that are made from the results of these studies. Second, the extant social psychology literature suggests that the DIT may invoke bias with respect to gender (Reiter 1996), religion (Richards and Davison 1992), culture (Ma and Cheung 1996) and political orientation (Elmer et al. 1983). If these biases do exist, then results from accounting studies using the DIT may also be biased with respect to these factors. Finally, some researchers have found a linear relationship between the DIT score and ethical behavior while others discovered a quadratic relationship.

Unlike the DIT or other measures of ethical values, the Ethics Position Questionnaire (EPQ) takes advantage of different criteria to describe variations in moral thought by focusing on two factors: idealism and relativism (Forsyth 1980). Forsyth categorizes idealism as a belief that desirable consequences can be achieved without violating moral guidelines. Relativism is described as the rejection of absolute moral rules for decision making. Schlenker and Forsyth (1977) suggest that individual differences with respect to moral judgment may be described most parsimoniously by these two factors.

A number of researchers examine the efficacy of the EPQ within a business context. Arrington and Reckers (1985) use the EPQ to determine an individual's tax compliance based upon ethical ideologies. The experiment used 48 corporate executive trainees to complete the EPQ, four tax evasion scenarios, and an exit questionnaire. The hypotheses tested the association between relativism/idealism and the seriousness of tax evasion, social responsibility of the tax evader, and the perception that tax compliance is a social norm. The authors found that as relativism increased, the judgment of seriousness

of tax evasion decreased, judgment of social responsibility decreased, and the view of tax evasion as a social norm decreased. The opposite effect was found for idealism.

Shaub et al. (1993) claim CPAs must be able to recognize that an ethical issue exists if they are to competently exercise sensitive, ethical judgments. In their study, these authors used path analysis to examine the ethical position, commitment, and ethical sensitivity of 207 auditors from several of the large national accounting firms. The results suggest that auditors who were more relativistic were less likely to recognize ethical issues that were embedded in the scenarios used in the study. Further, these auditors were also less committed to the firm and the profession. On the other hand, idealism was associated with a higher level of professional commitment.

Barnet et al. (1998) collected survey responses from 381 marketing professionals who were members of the American Marketing Association to study their ethical ideologies using the EPQ. These researchers note that the results they obtained were generally consistent with prior studies in other disciplines, supporting the notion that the EPQ factors of idealism and relativism appear to be potentially important explanatory variables in models of individual ethical decision making in business settings. Further, their results suggest that personal moral philosophy is an important influence on ethical decision making. Davis et al. (2001) take a more direct approach, using two groups of participants in their study to evaluate the construct validity of the EPQ and to reassess the measure's utility in business ethics research. These authors found that the evidence for reliability and validity for Forsyth's original two factors (idealism and relativism) is promising. Across both of their studies, the idealism and relativism scales exhibited moderately high internal consistency.

Douglas and Wier (2000) administered the EPQ to 725 of the members of The Institute of Certified Professional Managers who were involved in the budget-setting process (220 usable responses were returned). The purpose of this study was to examine the effect of a manager's ethical position as it might impact budgetary slack creation behavior. The results provide evidence that ethical position, given opportunity and other incentives to create budgetary slack, helps to explain individual slack creation behavior. That is, in the presence of information asymmetry, the authors found a positive significant relationship between incentives to create slack and budgetary slack creation behavior. Further, as relativism increased, slack creation behavior increased.

Douglas et al. (2001) use the EPQ to examine the ethical decision-making of 304 accountants in public accounting. In particular, these researchers investigate the effects of organizational ethical culture and individual ethical orientation, and how these factors impact accountants' judgments of ethical dilemmas. Results of the study indicate that ethical orientation is related to ethical judgments in high moral intensity situations, but no association was found in low moral intensity situations.

Eastman et al. (2001) use the EPQ to explore physicians' responses to managed care dilemmas. This represents a business environment due to the fact that managed care programs are used to control medical costs. The authors note that the extant literature on managed care ethics is mostly focused on various examples of the ethical problems that the managed care environment creates, and not on the ethical dilemmas that physicians might face in this environment. The survey (four scenarios with different ethical dilemmas and the EPQ instrument) was sent to a national random sample of 1,000 family practitioners and 1,000 general surgeons (240 useable responses). The results show that

the doctors surveyed are significantly more idealistic than relativistic. Further, there was no support for the proposition that ethical ideology was related to ethical behavioral intentions.

The EPQ has been used to measure the ethical orientation of individuals in various settings. Swaidan et al. (2003) used the EPQ to study the ethical ideologies of African Americans and to test consumer ethics based on several demographic variables. Three hundred and fifteen professionals in the southern part of the U.S. participated in this study. The results indicate that participants who had high idealism scores rejected questionable consumer activities – those in which the consumer would benefit at the expense of others. Participants who had high idealism scores did not reject consumer activities that were classified as "no harm" activities, such as copying intellectual property.

Hadjistavropoulos et al. (2003) examine the ethical ideologies of psychologists and physicians using the EPQ. The results of that study show that psychologists are less relativistic than are physicians, but they are equally idealistic like physicians. Additionally, psychologists were more likely influenced by their code of ethics and less likely to be swayed by family views, religious background, and peer attitudes than physicians. The researchers suggest that psychologists might be more likely to adhere to an ethical code than doctors because of the greater emphasis clinical psychology programs place on ethics and ethical behavior.

Winter et al. (2004) present the results of two studies that examine the relationship between ethical ideology and intellectual property and privacy attitudes of individuals who regularly use the internet. The participants in both studies have used e-

mail and the web (290 useable surveys were collected in the first study and 316 in the second study). Their results suggest that idealists believe that it is less acceptable to ignore intellectual property and privacy rights. Relativists consider it more acceptable to violate intellectual property rights. Computer literacy moderated the relationship between idealism, relativism, and attitudes toward unethical information practices.

Based on the extent to which we now operate in a global marketplace, one might wonder if these two constructs, idealism and relativism, are equally useful in other cultures. Redfern and Crawford (2004) use a sample of 115 managers in China to evaluate the cross-cultural efficacy of the EPQ. Their results attest to the reliability of the two-dimensional EPQ. The authors also found regional differences: managers in the South (58) scored higher on idealism than did managers in the North (57).

Radtke (2004) uses a learning exercise to engage accounting students in ethical-issue deliberations. The EPQ is administered to classify students into groups based on their ethical orientation. The heterogeneous groups were used to discuss ethical situations that occur in the profession and develop resolutions based on the group's ethical orientation. Then, all group responses were discussed with the entire class. The learning exercise was used to help students identify ethical dilemmas, discuss the dilemmas with students of the same and varying ethical orientations, and then try to resolve the dilemmas.

Henle et al. (2005) administered the EPQ to 84 employed MBA students enrolled in business school programs in the southeastern United States. Their results showed that idealism was negatively related to both organizational and personal deviance. Relativism was not related to either organizational or interpersonal deviance. Employees with higher

degrees of relativism than idealism were more likely to engage in deviant behaviors that targeted their organization; employees who scored higher in idealism were much less likely to participate in deviant behavior toward the organization. Similarly, employees who scored lower in idealism were more likely to behave less ethically toward fellow employees in the organization.

Personality Traits

For more than two decades, accounting researchers and accounting professionals have been interested in the explanatory value of personality traits. Early research spans a number of topics, including differences that might be attributed to gender, ethnicity, job satisfaction, and turnover intentions, among other things. For example, Chase (1988) identified a number of interview techniques that might be particularly helpful for recruiters at CPA firms so that they might be in a better position to hire the "right" graduates. In particular, the author cautions firms to watch for personality indicators that signal a good fit with the firm's current employees. From the student's perspective, Ainsworth et al.'s (1990) survey asked college students to identify characteristics of recruiters that were important to them as they searched for the "right" firm. The students indicated that the personality of the recruiter was essential, that is, the recruiter should communicate well, be relaxed, and be genuinely interested in the candidate. Other studies examine whether personality characteristics might help explain the lack of upward mobility for women in large accounting firms (Maupin 1991, Davidson and Dalby 1993).

Most of the studies of personality that have been conducted by accounting researchers employ the Myers-Briggs Type Indicator (MBTI) to examine possible relationships between personality traits (as identified by this instrument) and a wide variety of factors. For instance, Choo (1987) uses the MBTI to examine whether there is

a relationship between an accountant's personality type and the person's perception of job-related stress. He found that the S-T-J personality profile satisfactorily discriminated among accountants' perceptions of job-related stress. In 1997, Wolk and Nikolai use the MBTI to explore personality differences between: (1) 94 graduate accounting students, (2) 152 undergraduate accounting students, and (3) 98 accounting faculty. The results suggest that the accounting students are predominantly E-S-T-J's, while the accounting faculty is primarily I-S-T-J's.

Over a period of eight years, Kovar et al. (2003) use the MBTI to compare the personality characteristics of accounting majors who attended the same university: 1992-1993 (149 students); 1998-1999 (161 students); and 1999-2000 (150 students). These researchers found that students in the later group (1999-2000) were more introverted and judgment oriented than were students in the earlier groups. Also, the later group had less diversity among personality traits than the earlier groups. Wheeler et al. (2004) identify opportunities for personality-based AIS research and encourage the use of the MBTI, noting that this instrument has been extensively validated and is widely used in many areas of research.

The extant literature on personality traits of accounting students, faculty, and professionals, using the MBTI, has generally been informative. However, more recent studies that have attempted to identify a relationship between these traits and performance have reported mixed results. For example, Ott et al. (1990) found that students with S-T preference performed better with the lecture method of instruction and N-F types performed better with a computer-assisted method. On the other hand, Oswick and Barber (1998) examined the personality traits and performance of students in an

introductory-level accounting course and found no significant relationships. Accordingly, Wheeler (2001) encourages researchers to explore these performance inconsistencies that have been reported.

In contrast, Lampe (2004) notes that a number of different personality measurement instruments exist and some of these other instruments might be more appropriate than the MBTI. One of the instruments is the Big Five Traits of Personality (the Big Five), which Lampe identifies as the most commonly used instrument in recently published personality research. In further support of this particular instrument, Lampe claims that the reliability and validity scores from studies that use this instrument are consistently high. In studies to examine the internal consistency of the Big Five, coefficient alphas range from .86 to .95 while test/retest reliability correlations from meta-analyses are r = .87 to r = .91 (Bernard et al. 2002). According to Lampe, these scores are much higher than the MBTI or other personality inventories. Perhaps the most important point is that the Big Five instrument measures a different set of personality trait constructs, and in Lampe's opinion, is a better assessment of personality traits than the MBTI for most AIS research objectives.

Tupes and Cristal (1961) are generally credited with identifying five broad personality traits, based on a series of extensive studies with the U.S. Air Force. The five factors were derived from factor analyses of a large number of self- and peer-reports on personality-relevant adjectives and questionnaire items. However, due to competing research and critics of Tupes and Cristal's work, a measurement instrument for the five factors was not developed and tested until the late 1980s.

There are actually two related but conceptually different five-factor models: the Five Factor Model and the Big Five. The Five-Factor Model (FFM) is the work of Costa and McCrae (1986, 1992) and is based on factor analyses of questionnaires. The Big Five Traits of Personality Model and assessment test is the work of Goldberg (1990, 1999) and is based on factor analyses of trait descriptive adjectives. The Big Five traits are: (1) extraversion (sociable, gregarious, and assertive); (2) agreeableness (cooperative, compliant and trusting); (3) conscientiousness (thorough, diligent and responsible); (4) emotional stability; and (5) intellect (creative, open, and broad-mindedness). The Big Five model is a widely used and accepted taxonomy in the personality psychology literature (Goldberg 1992, Wiggins and Trapnell 1997, John and Srivastava 1999).

Following the development of these personality instruments, a large number of tests were conducted, followed by meta-analytic research to summarize the association between the five factors and job performance. The results of these studies suggest that certain personality traits are significant predictors of job performance (e.g., Barrick and Mount 1991, Stewart and Carson 1995, Robertson et al. 2000, Barrick et al. 2001). Specifically, Barrick and Mount's (1991) meta-analysis indicates that the traits of conscientiousness and extraversion are generally valid predictors of job performance.

In 1993, Barrick and Mount extended their 1991 study by introducing a moderator variable (extent of autonomy on the job) to determine whether this factor influences the relationship between conscientiousness and extraversion, as well as overall performance for managers. The subjects who participated in this study were 146 managers who completed a personal inventory and an exit questionnaire. The results suggest that conscientiousness and extraversion are positively related to manager performance, and

managers who possess these traits perform better in an autonomous work environment than managers who did not posses these traits. Further, managers with lower scores on the agreeableness trait performed better in high autonomous jobs than the managers in low autonomous jobs.

Robertson et al. (2000) administered personality questionnaires to 453 managers in the U.K. who worked in a financial service organization, a manufacturing company, or a distribution company. The supervisor of each of these managers was asked to complete a performance rating scale, a promotability scale, and an inventory that rated the manager's competence. The results for overall job performance varied across the entities. Although the authors found no statistically significant association between conscientious and overall job performance, they did find a relationship between conscientiousness and some specific organization and quality performance factors. These findings suggest that the interaction of various personality traits contribute to overall job performance.

Barrick et al.'s (2001) meta-analysis evaluates the relationship between the personality traits measured by the Big Five and job performance. The authors found that conscientiousness had the highest overall validity and was an accurate predictor of performance across all occupations. Emotional stability also predicted overall job performance but at a lower level than conscientiousness. The other traits were valid predictors of performance in some occupations but did not show statistically significant relationships with overall job performance. Extraversion predicted success in training performance, managerial jobs, and police occupations. Based on these findings, the authors encourage researchers to explore additional relationships between personality traits and performance.

In Witt (2002), the interaction of conscientiousness and extraversion on two different types of performance is explored: interview performance and job performance. Four samples were used in this study. All participants completed an inventory to measure the level of certain personality traits that they possessed. Interview performance was measured by a human resource director and two supervisors. Job performance was rated by a direct supervisor using a five-point scale. In all samples, conscientiousness was not related to job performance in highly introverted employees. However, the highly conscientious extroverts achieved the highest probability of being hired in the interview and received the highest supervisor ratings in three of the four samples. Extroverts received higher performance ratings than introverts in all four samples. Thus, employees who are both extraverted and conscientious outperform those individuals who do not possess these traits.

In a later meta-analysis, Salgado (2003) examines American and European studies that used the Big Five and non-Big Five based inventories. When emotional stability and conscientiousness were measured using both inventories, the difference in the operational validity was substantial between the two measures with the Big Five inventories producing the more accurate results. Salgado also found that conscientiousness and emotional stability are accurate predictors of job performance as measured by supervisor's performance ratings.

In Chamarro-Premuzic and Furnham (2003), two longitudinal studies were conducted using British undergraduate students to assess the effect of personality traits on academic performance. The following results were obtained: conscientiousness was the highest statistically significant predictor of overall performance, extraversion and

intellect had no association with performance, and overall, personality traits were accurate predictors of academic success.

Ferguson et al. (2003) studied the personality and performance of medical students for three assessment levels (years 1/ 2 of medical school, year 3, and clinical performance in years 4/5). The results showed that conscientiousness was the only personality trait that was a significant predictor for all three assessment levels. The predictability of conscientiousness was higher for preclinical assessments than clinical assessments. This finding suggests that conscientiousness might be a valid predictor of job performance for repetitive, well-organized tasks but not for unstructured, complex tasks, such as clinical performance. Agreeableness predicts successful preclinical performance for certain situations while the effects of other personality traits are not statistically significant for performance.

Researchers are beginning to combine various constructs in attempts to increase their understanding of personality. In 2004, Zweig and Webster studied the relationship between goal orientation and the personality traits as measured by the Big Five and the impact of this relationship on performance intentions. Seven hundred and eighty-six students enrolled in introductory psychology courses completed the goal orientation and personality traits inventories, and 626 of the same students completed a questionnaire of intentions to become involved in school related activities. Structural equation modeling was used to test the direct and indirect relationships among the personality traits and goal orientation constructs. The findings suggest that goal orientation increases performance above and beyond that which is explained by personality traits. That is, personality traits

form different points of reference toward learning and goals, which might indicate the types of tasks an individual will attempt.

Conscientiousness has shown to be an accurate predictor of performance but few studies have been conducted that measure the association over time. Perlow and Kopp (2004) measure the strength of the relationship between conscientiousness and performance over time. Participants included 274 students enrolled in an accounting class, and their performance was measured using two tests and a final examination. Levels of conscientiousness were unrelated to scores on the first test but significantly related to scores on the second test and the final examination. The authors also found an interaction between conscientiousness and time. That is, participants with higher levels of conscientiousness performed better over time than participants with lower levels of conscientiousness.

As mentioned in the Expertise Section, Ashton (1999) encourages accounting researchers to enrich the expertise paradigm by including the personality trait of conscientiousness in future research studies.

CHAPTER III

METHODOLOGY AND RESEARCH HYPOTHESES

Novice-Expert Paradigm (Knowledge and Experience)

Many accounting researchers have examined the impact of knowledge and experience on performance. Bonner and Lewis (1990) urge researchers to clearly identify the knowledge needed to complete a specific task, rather than assume that all individuals at a given level of experience equally possess task-specific knowledge. Bonner and Pennington's (1991) study suggests that instruction is important for learning (knowledge acquisition) and for successful task performance by experts. Libby (1993) reports specific instruction and experiences lead to superior knowledge, and Libby and Luft (1993) propose an expanded model to examine expertise (performance).

Colbert (1989) believes that experience may be vital for complex or unstructured decisions but not necessary for relatively simple or structured judgments. Based on the results from two studies, Ashton (1991) concludes that audit experience should be related to specific audit tasks rather than viewed as general domain knowledge. Tubbs' (1992) study included two tasks that focused on the effect of experience on the auditor's knowledge of errors and irregularities. The results suggest that those individuals with more auditing experience (professionals versus introductory accounting students) recalled more errors, were more accurate about the errors they identified, and recalled more atypical errors.

The present study uses three measures as proxies for task-specific knowledge that are expected to directly relate to the task of recognizing fraudulent activity in an

organization. The variables are: (1) academic major, (2) work-related fraud training, and (3) reading articles that specifically relate to fraud within an organization. The experience measures used in this study are years of work experience and encounters with fraud at the individual's place of employment.

Knowledge

The first source of task-specific knowledge is the individual's major in college. Specifically, an accounting major is considered task-specific based on the fact that the curriculum for accounting majors differs from other business majors in terms of the emphasis placed on professionalism, integrity, relying on management's representations as that relates to the accuracy of financial statements, the potential risk associated with auditing financial statements, and the emphasis on internal controls that is now required as a result of the Sarbanes-Oxley Act. Classes in the accounting curriculum focus on analysis of financial statements and the implications of various financial transactions. Throughout the curriculum, accounting students are introduced to ethical dilemmas that occur in the accounting profession and are taught to detect errors and irregularities (intentional and unintentional) that may occur in financial reporting. Task-specific knowledge might also be obtained from two additional sources: (1) fraud-specific training from an employer and (2) reading articles that are related to employee theft in organizations.

Experience

Following many earlier studies in the auditing expertise literature, experience is measured by the number of years of work experience the individual has accumulated. The expectation is that individuals who have more years of work experience will be more

likely to recognize unusual behavior exhibited by co-workers. This suggests that managers and accountants who have more years of work experience should be more likely to recognize unusual co-worker behavior than those who have no full-time work experience or those who are entry-level employees.

The second experience variable is defined as an individual who has previously witnessed employee theft at his or her place of employment or is familiar with circumstances of an incident that occurred within the organization. According to the 2003 KPMG fraud survey, when confronted with fraud or employee embezzlement in the organization, management takes immediate action against the employee (begins an investigation, terminates the employee, and/or seeks legal action) and also introduces programs (strengthening internal controls, instituting fraud awareness training and/or beginning periodic compliance audits) to mitigate employee fraud in the future. Individuals who work in these types of organizations should be exposed to the measures taken by the organization and internalize these actions. They should be able to draw on this experience in future encounters.

Based on the preceding discussion of relevant knowledge and experience variables, the following hypothesis was tested:

H1: When confronted with increasing levels of fraud risk factors, individuals who have task-related knowledge and experience with fraud will exhibit positive systematic variation in their assessment of the possibility of fraud.

Goal Orientation

As Dweck (1986) suggested, an individual's goal orientation can have predictable results in terms of: (1) how well individuals use existing skills and knowledge; (2) how well individuals acquire new skills and knowledge; and (3) how well individuals transfer

these new skills and knowledge to novel situations. Generally speaking, individuals who have a learning goal orientation may be expected to focus on the development of skills, knowledge, and competence at performing a task. Based on the fact that fraud detection is considered an unstructured task – one that would most likely challenge a person – the expectation is that an individual who is learning goal oriented would be more likely to assimilate the variety of clues and then more accurately assess the possibility of fraud. To examine the potential impact of learning goal orientation on an individual's ability to assess the possibility of fraud, the following hypothesis was tested:

H2a: When confronted with increasing levels of fraud risk factors, individuals who have a higher learning goal orientation will exhibit positive systematic variation in their assessment of the possibility of fraud.

The extant literature on goal orientation also reports that individuals who possess a performance goal orientation exhibit very different characteristics than those with a learning goal orientation. In general, those with a performance goal orientation tend to (1) expend less effort and develop fewer complex learning strategies (Fisher and Ford 1998); (2) possess a lower opinion of their abilities (Phillips and Gully 1997); (3) possess a lower motivation to learn (Colquitt and Simmering 1998); and (4) be more satisfied and perform better on a simple task than learning goal oriented individuals (Johnson et al. 2000). To examine the potential value of performance goal orientation in the present context, the following hypothesis was tested:

H2b: When confronted with increasing levels of fraud risk factors, individuals who have a higher performance goal orientation will exhibit no systematic variation in their assessment of the possibility of fraud.

Ethical Orientation

The extant literature on ethical orientation suggests that an individual's ethical orientation can produce predictable results in terms of an individual's information processing and decision making performance. Individuals who tend more towards an idealistic ethical orientation are expected to choose the morally correct action regardless of the specific situation. They believe that desirable consequences can be achieved without violating moral guidelines. In contrast, those individuals who have more of a relativistic ethical orientation should be more focused on the parameters of the current situation instead of applying general ethical principles to the situation. That is, they reject absolute moral rules for decision making. Therefore, the expectation is that individuals with more of an idealistic ethical orientation would be more attentive to a correct action and always doing what is morally right. Thus, they should be more acutely aware of questionable behaviors in the workplace and perhaps more sensitive to the possibility that employee wrong-doing (fraud) is in progress. Based on this discussion, the following hypotheses were tested:

H3a: When confronted with increasing levels of fraud risk factors, individuals who tend to have more of an idealistic ethical orientation will exhibit positive systematic variation in their assessment of the possibility of fraud.

H3b: When confronted with increasing levels of fraud risk factors, individuals who tend to have more of a relativistic ethical orientation will exhibit no systematic variation in their assessment of the possibility of fraud.

Personality Traits

A number of studies in organizational psychology have shown a statistically significant relationship between conscientiousness, extraversion, and job performance. Barrick and Mount (1993) report that managers who are conscientious and extraverted

perform better in an autonomous work environment (typically the work environment for an experienced auditor) than managers who do not posses these traits. Ashton (1999) encourages accounting researchers to investigate the relationship between conscientiousness and job performance of auditors, based on the belief that a positive and significant relationship might exist. Accordingly, the following hypotheses were tested:

H4: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *conscientiousness* will exhibit positive systematic variation in their assessment of the possibility of fraud.

H5: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *extraversion* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Although prior research on the remaining three personality traits does not suggest how these characteristics might enhance task performance, they will be tested as research questions to evaluate the possible usefulness of these traits in the present context (an unstructured auditing task). Accordingly, the following research questions were examined:

RQ1: When confronted with increasing levels of fraud risk factors, will individuals who possess the personality trait of *agreeableness* exhibit positive systematic variation in their assessment of the possibility of fraud?

RQ2: When confronted with increasing levels of fraud risk factors, will individuals who possess the personality trait of *emotional stability* exhibit positive systematic variation in their assessment of the possibility of fraud?

RQ3: When confronted with increasing levels of fraud risk factors, will individuals who possess the personality trait of *intellect* exhibit positive systematic variation in their assessment of the possibility of fraud?

The research model for the present study is depicted in Figure 1.

[Insert Figure 1 Here]

Specifically, KNOWLEDGE is measured by: (1) academic major, (2) training on the topic of fraud, and (3) the number of fraud articles read. EXPERIENCE is measured by: (1) years of work experience, and (2) personal encounter with employee theft in the work environment. GOAL orientation is measured using the goal orientation instrument developed by Button et al. (1996). ETHICAL orientation is measured using Forsyth's (1980) ethical position questionnaire. Finally, PERSONALITY traits are examined using the Big Five Traits of Personality developed and tested by Goldberg (1990, 1999).

The Experimental Design

The experiment used in the present study is a 2 x 2 x 2 factorial design, based on three risk factors that are either absent or present. This yields eight distinct scenarios and each scenario contains a different combination of the three risk factors (segregation of duties, documentation, mandatory vacations). For example, Scenario One contains three risk factors that are all present and Scenario Eight has no risk factors present. Practically speaking, in Scenario Eight there is an appropriate segregation of duties, all documentation is present for valid transactions, and key employees are taking the required and expected amount of vacation days. The risk factors that are present in each scenario are identified in Figure 2.

[Insert Figure 2 Here]

This study uses a between-subjects design to help mitigate the problem of demand effects that can occur in a within-subjects design. If each participant was assigned more than one scenario, it is likely that the purpose of the task would become apparent. The between-subjects design more accurately represents circumstances encountered in an auditing work environment, that is, auditors usually assess risk in the planning stages of

an audit. It is not typically an assessment that would be considered a repetitive judgment. Similarly, managers in an organization would most likely attend to this judgment only when they believe there is justifiable concern that fraudulent activity is suspected or is in progress. Therefore, since fraud assessment is not made on a daily basis in a real-world work environment, each participant in the experiment read one scenario and made an assessment on the likelihood that fraud was occurring.

The Task

The task for this study is a case that was adapted from an actual instance of misappropriation of assets that occurred in a city government office. Each participant in this experiment read instructions on how to complete the task, background information on the case, and one of eight possible scenarios. After reading these materials, each participant answered seven questions. Most of the questions are distracters. The sixth question, which is the dependent variable for this study, asks the participant to assess the possibility that misappropriation of assets is in progress. If the participant believes that employee theft is occurring, the participant is asked to identify which employee might be committing the theft. Participants are randomly assigned to the scenarios by the researcher, and after completing the experiment, each is given an exit questionnaire. The exit questionnaire solicits a variety of demographic information and also contains a manipulation check. Most participants completed the experimental materials within 45 minutes. The experimental materials are included in Appendix A.

A manipulation check is essential in between-subject designs to be sure that the participant attended to the information that was manipulated. Otherwise, insignificant results might occur because a statistically significant relationship does not exist or

because participants did not understand, or ignored, the information that was being manipulated (Pany and Reckers 1987). The first three questions in the exit questionnaire are the manipulation check and ask the participant to recall whether each risk factor was absent or present in the scenario that the participant was assigned. In the governmental office where the misappropriation of assets occurred, several specific risk factors (identified in SAS No. 82) were present. Three of those risk factors are used as treatments in the present study: (1) lack of appropriate segregation of duties or independent checks, (2) lack of timely and appropriate documentation for transactions, and (3) lack of mandatory vacations for employees performing key control functions.

The Participants

The participants for this study include students and professionals. The students are from universities in North Carolina, Texas, and Virginia. The student group includes: (1) 258 upper-level accounting majors enrolled in accounting information systems and auditing classes and (2) 264 upper-level management majors enrolled in a variety of upper division management classes. The upper-level accounting and management majors may be considered surrogates for entry-level auditors and managers, respectively, and would be expected to have the same fraud schema as the two groups they represent. None of these students are expected to have significant work experience. All participants were informed that their participation was strictly voluntary.

The professional group is expected to have relevant work experience, and this group includes: (1) 244 MBA students from three universities and (2) 248 internal auditors from a variety of organizations in North Carolina and Virginia. Table 1 summarizes the participants in this study.

[Insert Table 1 Here]

Table 2 depicts the number of participants in each group that completed each scenario.

[Insert Table 2 Here]

The Dependent Variable

The dependent variable for this study is each participant's assessment of the possibility that fraud might be in progress. This assessment is measured on a scale of zero to 100 percent. Recall that eight distinct scenarios resulted from using three risk factors that were either absent or present. Accordingly, some participants had only a few pieces of information in the background materials that might be cause for concern while other participants had the same background information as well as one, two, or three risk factors present.

The Independent Variables

Risk Factors

Three risk factors were manipulated at two levels, which yielded eight distinct scenarios. Each of the scenarios contains varying levels of risk factors, as well as different combinations of the risk factors. The purpose of this manipulation is to test the ability of managers and auditors to recognize these risk factors. The three risk factors are: (1) lack of appropriate segregation of duties or independent checks, (2) lack of timely and appropriate documentation for transactions, and (3) lack of mandatory vacations for employees performing key control functions.

Knowledge and Experience

The knowledge variables for each subject are measured by the academic major of the participant, work-related training, and the number of articles the person has read on the topic of organizational fraud. The experience variables are measured by: (1) the number of years of full-time work experience the participant possesses (for the professional group only) and (2) whether or not the subject has encountered fraudulent activity at his or her place of employment.

Goal Orientation

Goal orientation was measured using the instrument developed by Button et al. (1996). This instrument, called Goals Inventory for purposes of this study, contains a list of 16 items. Eight items relate to the learning goal orientation of the individual and eight items relate to the performance goal orientation of that person. Each of the orientations has a maximum score of 56 (see Appendix B).

Ethical Orientation

This study uses the Ethics Position Questionnaire (EPQ) developed by Forsyth (1980) to determine the ethical position of each participant. The validity and psychometric properties of this instrument have been validated in previous studies (Forsyth 1980, Arrington and Reckers 1985, Douglas et al. 2001). The EPQ contains twenty items with the first ten relating to idealism and the final ten relating to relativism. The idealism score is computed by taking the sum of the first ten items and the relativism score is calculated by taking the sum of the final ten items. An individual's ethical position is determined by using both of these scores. The EPQ is named the Forsyth Opinion Questionnaire for purposes of this study and is included in Appendix C.

Personality Traits

The personality traits of each participant are measured using the Big Five Traits of Personality by Goldberg (1990, 1999). This instrument contains ten items for each of the five personality traits measured (conscientiousness, extraversion, agreeableness, emotional stability, and intellect) and provides domain scores for each trait. Each item was measured on a scale of one (very inaccurate) to five (very accurate). The inventory, titled the Factor Marker Inventory for purposes of this study, may be found in Appendix D. Table 3 identifies the independent variables for this study.

[Insert Table 3 Here]

Tests of Hypotheses

Tests of Hypotheses: Hypothesis One

Hypothesis one tests whether the task-specific knowledge and experience variables have a positive impact on an individual's ability to assess fraud at a higher level as risk factors increase. The model used to test hypothesis one is:

$$Y_i = b_0 + b_1\, RF_i + b_2\, MAJOR_i + b_3\, TRAINING_i + b_4\, ARTICLES_i + b_5\, FULL_i + b_6\, THEFT_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i.
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i.
$MAJOR_i$ = 1 if the subject is an accounting major, and 0 otherwise.
$TRAINING_i$ = 4 if the subject has more than 10 courses, 3 = 7-10 courses, 2 = 4-6 courses, 1 = 1-3 courses and 0 = none.
$ARTICLES_i$ = 4 if the subject has read more than 6 articles, 3 = 5-6 articles, 2 = 3-4 articles, 1 = 1-2 articles and 0 = none.
$FULL_i$ = years of full-time work experience (for MBAs and IAs only).
$THEFT_i$ = 1 if the subject has had direct experience with employee theft at his or her place of employment, and 0 otherwise.
ε_i = error term for subject i.

Tests of Hypotheses: Hypothesis Two (a) and (b)

Hypotheses two (a) and (b) explore the impact of an individual's learning goal orientation and performance goal orientation as that relates to his or her ability to assess fraud at higher levels as the number of risk factors increase. The following model is used to test the hypothesis:

$$Y_i = b_0 + b_1 RF_i + b_2 LGO_i + b_3 PGO_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i
LGO_i = the subject's learning goal orientation score
PGO_i = the subject's performance goal orientation score
ε_i = error term for subject

Tests of Hypotheses: Hypothesis Three (a) and (b)

Hypotheses three (a) and (b) examine the impact of an individual's ethical orientation on the individual's ability to identify fraudulent activity as the number of risk factors increase. The following model is used to test these two hypotheses:

$$Y_i = b_0 + b_1 RF_i + b_2 IEO_i + b_3 REO_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i
IEO_i = the subject's idealistic ethical orientation score
REO_i = the subject's relativistic orientation score
ε_i = error term for subject

Tests of Hypotheses: Hypothesis Four

Hypothesis four tests the impact of an individual's conscientiousness (personality trait) on the individual's ability to identify fraudulent activity as the number of risk factors increase. The extant literature on personality traits suggests that both

conscientiousness and extraversion are positively related to performance in a variety of tasks. The model to test this hypothesis is as follows:

$$Y_i = b_0 + b_1 RF_i + b_2 PT(C)_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i
$PT(C)_i$ = the subject's factor score for the personality trait of conscientiousness
ε_i = error term for subject

Tests of Hypotheses: Hypothesis Five

Hypothesis five examines the impact of an individual's extraversion (personality trait) on the individual's ability to identify fraudulent activity as the number of risk factors increase. The following model is used to test this hypothesis:

$$Y_i = b_0 + b_1 RF_i + b_2 PT(E)_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i
$PT(E)_i$ = the subject's factor score for the personality trait of extraversion
ε_i = error term for subject

Tests of Research Questions

Prior research regarding the remaining three personality traits (agreeableness, emotional stability, and intellect) does not suggest how these characteristics might impact task performance. However, in an unstructured auditing task such as fraud detection, any one or a combination of these traits may be helpful. Accordingly, each of the three personality traits will be examined to evaluate the possible usefulness of these traits in the

present context. The following model will be used to examine these three personality traits:

$$Y_i = b_0 + b_1\ RF_i + b_2\ PT(A)_i + b_3\ PT(ES)_i + b_4\ PT(I)_i + \varepsilon_i$$

Where:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the scenario that was randomly assigned to subject i
$PT(A)_i$ = the subject's factor score for the personality trait of agreeableness
$PT(ES)_i$ = the subject's factor score for the personality trait of emotional stability
$PT(I)_i$ = the subject's factor score for the personality trait of intellect
ε_i = error term for subject

Additional Analysis

The extant literature suggests that knowledge and experience help explain differences in performance of external auditors in certain structured auditing tasks. Most of these studies are based either on regression analysis or ANOVA. However, Libby and Luft (1993) and Libby and Tan (1994) began to question the direct and indirect effects of knowledge and experience (and other variables) as determinants of audit expertise (performance).

The present study examines whether additional constructs such as goal orientation and ethical orientation add any additional explanatory value to these models of expertise (performance). In this section, structural equation modeling (SEM) is used to examine goal orientation and ethical orientation as they might affect the performance of full-time internal auditors regarding a fraud assessment. A number of the studies on goal orientation (Button et al. 1996, Phillips and Gully 1997, Brett and VandeWalle 1999, Morris et al. 2003, Heintz and Steele-Johnson 2004) and ethical orientation (Douglas and

Wier 2000, Davis et al. 2001) use SEM to study these constructs, using various types of decision making tasks.

CHAPTER IV

DATA ANALYSIS

Diagnostic Procedures

Manipulation Checks

Manipulation checks are necessary to determine the validity of the experiment and to verify that the experiment tested the assumptions that were meant to be tested (Pany and Reckers 1989). In other words, three questions were included in the exit questionnaire to ensure that the participants understood the risk factors that were included in their scenario. The results of Chi-square tests for the manipulation checks are reported in Table 4, and each manipulation check was significant. The three questions asked on the exit questionnaire are as follows: (1) Did Stan have to ask Linda several times to develop controls over accounts payable? - segregation of duties - ($\chi^2 = 418.52$; $p = .000$); (2) Was a $10,000 check missing? - missing documents - ($\chi^2 = 757.60$; $p = .000$); and (3) Did Linda take a week-long vacation to the beach? - mandatory vacations - ($\chi^2 = 582.52$; $p = .000$).

[Insert Table 4 Here]

Regression Diagnostics

Standard diagnostic tests, such as testing for outliers, normality of residuals, heteroscedasticity, and collinearity were performed to substantiate that basic OLS assumptions were not violated. The following tests of the variables were conducted: correlation tables, histograms of the residuals, and scatterplots were examined for

normality, constant variance, and linearity. Based on these tests, it appears that the basic assumptions for regression are not violated.

Factor Analysis

Factor analysis was used to validate the dimensionality of goal orientation, ethical orientation, and personality traits. All sample responses were included in the analysis so that the results are as reflective as possible of the population being tested. Principle components factoring was used with varimax rotation. The eigenvalue greater than one criterion and factor loadings in the pattern matrices were used to determine the number of factors to retain.

For the goal orientation instrument, all items loaded on two factors that were identified as learning goal orientation and performance goal orientation. The results suggest that the goal orientation instrument is a valid measure of the two goal orientation dimensions for this study. The scale reliability (Cronbach's alpha) is .79, which is acceptable.

Results of the factor analysis for ethical orientation revealed two factors, which were labeled idealism and relativism. Items loaded on two factors and the scale reliability for these factors is .83. Results suggest that the instrument is a valid measure of the two dimensions of ethical orientation for the participants in this study.

Finally, factor analysis was conducted on the personality traits inventory, which contains 50 items. Of the 50 items, 48 items loaded on five factors, labeled conscientiousness, extraversion, agreeableness, emotional stability, and intellect. Two of the items, "make a mess of things" and "shirk my duties", did not load on any factor

(loading $\geq$ .40). The scale reliability of this instrument is .86, which indicates that the inventory is a valid measure of personality traits for this sample.

Data Analysis

The data for this study was analyzed in three separate stages to take advantage of the disparate groups of participants. Stage One is comprised of the management and accounting students who will be identified hereafter as the student group. The second stage analyzes data for the professionals who are the MBAs and internal auditors. These participants all have at least one year of professional experience. Stage Three analyzes only the accounting professionals who participated in this study so that they can be examined separately within the context of the expert-novice paradigm. The third stage is conducted using only the internal auditors with the expectation that one or more of the variables of interest may enrich the expert-novice paradigm with respect to performance of a complex, unstructured task.

Stage One: The Student Group

Descriptive Statistics

Table 5 reports the demographic data and descriptive statistics for the student group. Independent sample t-tests were used to test for significant differences between the responses from the management majors and the accounting majors. There were 258 management majors and 264 accounting majors in the study. The mean age is 27 for the management majors and 26 for the accounting majors, which is not significantly different. Almost 75 percent of all students noted that they had not attended any fraud training at their place of employment. Unexpectedly, over 25 percent of the management majors and almost 20 percent of the accounting majors reported that they had not read

any fraud articles in the prior 30 days; however, half of the management students (51.9 percent) and almost half of the accounting students (49.2 percent) reported having read 1-2 fraud articles in the prior 30 days. Based on the enormous impact of the accounting scandals over the past several years, the expectation is that nearly all of the business students would be required to read these types of articles in the classroom on a somewhat regular basis, yet only 4.5 percent of management majors and 7 percent of accounting majors reported reading more than 6 articles in the prior 30 days.

Approximately two-thirds of both management major and accounting majors reported that they had experienced theft at work. All students were also asked who they believed had the primary responsibility to detect fraud in the workplace. Over fifty percent of both the accounting (57.2 percent) and management students (51.5 percent) believed it is management's responsibility to detect fraudulent activity. Based on the scenario they were given, students were asked if they thought employee theft was occurring in the finance department. Significantly more accounting students believed employee theft was occurring (58 percent) than did their management (42 percent) counterparts. Additionally, 52.4 percent of a management majors and 53.9 percent accounting majors reported that they had knowledge about fraud, and 59.3 percent of management students and 58.6 percent of accounting students felt they could detect fraud. Further, most of the accounting students (89.3 percent) and the management students (85.5 percent) thought that fraud is an important topic. Such a high response rate is most likely the result of an increased emphasis placed on the topic of fraud across business curriculums due to corporate scandals such as Enron, WorldCom, Tyco, HealthSouth, and others.

[Insert Table 5 Here]

The descriptive statistics for goal orientation, ethical orientation, and personality traits are reported in Table 6. The mean learning goal orientation scores and perfomance goal orientation scores were similar for the management and accounting majors. For ethical orientation, the mean scores for idealism are higher than those for relativism. The management majors' mean scores were higher on both dimensions than their accounting counterparts. Regarding the personality traits, mean scores for the accounting students were significantly higher ($p<.05$) than the management students for conscientiousness. For the trait of intellect, the management students' scores were significantly higher ($p<.05$) than were the scores for the accounting students. No significant differences existed for the traits of extraversion, agreeableness, or emotional stability.

[Insert Table 6 Here]

Hypotheses Testing

Hypothesis One: When confronted with increasing levels of fraud risk factors, individuals who have *task-related knowledge and experiences* with fraud will exhibit positive systematic variation in their assessment of the possibility of fraud.

The effect of knowledge and experience on the students' assessments of the possibility of fraud was tested using regression analysis. The results are reported in Table 7 and show that the model for the student group is statistically significant ($F = 13.869$; $p = .000$). Overall, the model explains 11 percent of the variation in their assessment of the possibility of fraud. The coefficient for risk factors (RF) is positive and statistically significant, adding 5.3 percent to the student's assessment that fraud may be occurring, as fraud risk factors increase.

One of the measures used to test the impact of knowledge on fraud assessment was the major of the students. MAJOR was statistically significant in the predicted direction. Accounting majors assessed fraud at a higher level than their management peers. Specifically, accounting majors assessed the likelihood that fraud might be occurring at a level of 15.8 percent higher than did the management majors, suggesting that the analytical skills that students learn while an accounting major better prepare them to identify certain risks in a business setting and then more skeptically assess the possibility of fraudulent activity. This result supports Bonner et al.'s (1997) claim that categorical knowledge enables inexperienced auditors to perform better than auditors without this knowledge. As accounting majors take courses that discuss risk factors and fraud (typically accounting information systems and auditing courses), they acquire task specific knowledge which apparently enables them to perform better than their management counterparts in assessing fraudulent activity.

Fraud specific training and previous exposure to employee theft in the workplace does not appear to aid students in their assessment of the possibility of fraud. This finding may be attributed to the fact that only about 25 percent of the students reported any fraud training. Marginal statistically significant results ($p < .10$) were observed for the effect of reading articles on the topic of fraud ($t = 1.720$; $p = .086$). Perhaps this result may be explained by the media attention on fraudulent activity due to the large number of corporate scandals over the past few years. Students may have been required to read articles that enabled them to better identify employee theft. Therefore, hypothesis one is supported for risk factors and major, but only marginally supported for the number of articles the students read on the topic of fraud.

[Insert Table 7 Here]

Hypothesis Two (a): When confronted with increasing levels of fraud risk factors, individuals who have a higher *learning goal orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Individuals who have a learning goal orientation (LGO) are expected to focus on the development of skills, knowledge, and competence at performing a task. Based on the fact that fraud detection is considered an unstructured task, the anticipation is that an individual who is LGO would be more successful at assimilating the variety of clues, and in turn, more accurate at assessing the possibility of fraud. The results of the effect of LGO on the subject's assessment of the possibility of fraud are in the negative direction ($t = -1.905$; $p = .057$), and therefore hypothesis two (a) is not supported.

A plausible explanation is that students may deviate in their predominate goal orientation as they progress through their college career. For instance, Hastings et al. (2001) conducted a longitudinal study on pharmacy students to determine if students' goal orientations change during the years they are in college. The results showed a decrease in LGO scores for the students during the time they were at the university. The authors speculated that this change might have occurred because the students became very focused on only material needed to pass tests and achieve higher grades in their courses, thus, focusing more on performance.

In Morris et al. (2003), the relationship between goal orientation and coping style among traditional and nontraditional college students revealed that learning goal orientation increases as age increases. The researchers posited that older students are more likely to focus on learning for its own sake, while younger, traditional students focus on performance to reach their immediate goal of attaining a college degree. The

negative coefficient for LGO in the present study might suggest the same phenomena in the business school students who participated in this study. Perhaps they are more focused on achieving good grades (performance oriented) in order to achieve an undergraduate degree.

[Insert Table 8 Here]

Hypothesis Two (b): When confronted with increasing levels of fraud risk factors, individuals who have a higher *performance goal orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

Individuals who possess a performance goal orientation (PGO) tend to (1) expend less effort and develop fewer complex learning strategies (Fisher and Ford 1998); (2) possess a lower opinion of their abilities (Phillips and Gully 1997); (3) possess a lower motivation to learn (Colquitt and Simmering 1998); but (4) they tend to be more satisfied and perform better on a simple task than learning goal oriented individuals (Johnson et al. 2000). The task for this study is a complex, unstructured task that requires participants to assemble a number of clues, analyze various pieces of data, and then analyze the implications of this information. Hence, performance goal oriented individuals would not be expected to be as competent at identifying the risk factors that lead to fraud assessment and analyzing how these pieces of information might fit together to explain a possible fraud-in-progress.

Table 8 also reports the effect of PGO on the subject's assessment of the possibility of fraud. As predicted, the effect of PGO on the subject's assessment of the possibility of fraud was not statistically significant for the student group ($t = .390$; $p = .697$). These results are consistent with those from prior research (e.g., Vande Walle et al. 1999, Janssen and Van Yperen 2004). Students who expend less effort, are not

motivated, and prefer simple tasks should not be as successful on a complicated, unstructured task such as the assessment of fraud (Johnson et al. 2000); therefore, these results support hypothesis two (b).

Hypothesis Three (a): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of an *idealistic ethical orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Previous studies on ethical ideology report that an individual's ethical orientation can produce predictable results in terms of decision making performance. Individuals with more of an idealistic ethical orientation are expected to focus on choosing the "right" action. Those individuals who have more of a relativistic ethical orientation should focus on the characteristics of any given situation instead of applying general ethical principles.

Table 9 reports the results for hypothesis three (a), which examined the effect of idealism on an individual's assessment of the possibility of fraud. The results for the effect of idealism were not significant. Based on the results, hypothesis three (a) is not supported. Shaub et al. (1993) hypothesized that idealism is positively associated with ethical sensitivity; however, their results did not support this notion. These authors surmised that the participants in their study who were classified as idealists may not have detected the ethical concerns embedded in the particular scenarios because the theme or problem in the scenario did not cause significant harm to others. Similarly, Swaidan et al. (2003) found that idealists did not reject questionable consumer activities that did not cause harm to others.

Perhaps the idealists in the present study either did not detect or did not reject the questionable activities in the case materials since harm did not occur to anyone. Many of

the recent scandals that have been reported in the popular press involve millions or even billions of dollars that have been mishandled or misused in very egregious ways that have caused great harm to many employees in those companies (e.g., losing jobs, retirement funds, etc.). The present study only had a $10,000 check missing (in four of the eight scenarios), and it was not stated that harm occurred to individuals or the organization in the task. In addition, as shown in Swaiden et al., younger, less educated, and unmarried consumers did not reject questionable consumer activities as readily as older, more educated, and married consumers. Since this is the student group with younger and less educated participants, the same result may have occurred in this study.

[Insert Table 9 Here]

Hypothesis Three (b): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of a *relativist ethical orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

Table 9 also contains the results for hypothesis three (b). As predicted, the subjects with more of a relativist ethical orientation exhibited no systematic variation in their assessment of the possibility of fraud. Shaub et al. (1993) believed that an auditor's ethical orientation is associated with his ability to recognize ethical issues that occur in a business setting. The authors found that relativism was negatively associated with an auditor's ethical sensitivity, which suggests that relativists are not as likely to recognize ethical issues embedded in a scenario. Similarly, the students in the present study may not have identified or recognized the many clues that were available in the background information and the particular scenario they read. As a result, they would not likely understand the level of risk that confronted the organization and were less able to assess the possibility of fraud at an appropriate level.

Other studies have shown that relativists tend to believe it is acceptable to engage in some forms of questionable behavior (Douglas and Wier 2000, Winter et al. 2004). Thus, even if the students identified the risk factors, they may have underestimated the potential for fraudulent activity or may not have been concerned that employee theft could be occurring because the dollar amount of the check was relatively insignificant. If this were the case, the relativists would probably not have believed that fraud was occurring. Nevertheless, hypothesis three (b) is supported.

Hypothesis Four: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *conscientiousness* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Barrick and Mount (1993) reported that conscientious and extraverted managers performed better in an autonomous work environment (typically the work environment for an experienced auditor) than managers who do not posses these traits. Most of the extant literature on personality traits has shown that conscientiousness is an accurate predictor of overall job performance (Barrick et al. 2001). The studies that reported a positive association between conscientiousness and job performance used employees as participants for the experiment (e.g., Barrick and Mount 1993, Witt 2002).

The results obtained in the present study for conscientiousness and performance are reported in Table 10, Panel A. These results suggest that students are not suitable proxies for employees in an autonomous work environment. Another possibility is that conscientiousness does not predict performance under all conditions. For example, Robertson et al. (2000) found that conscientiousness was not a valid predictor of overall job performance but a valid predictor of performance for specific tasks. Likewise, the results of Ferguson et al. (2003) indicated that conscientiousness predicted success in

tasks that are organized and methodical but not in task that are complex and require strategic problem solving. Fraud assessment is considered a complex, unstructured task, and thus, conscientiousness may not predict successful fraud assessment. Based on the results obtained, hypothesis four is not supported.

[Insert Table 10 Here]

Hypothesis Five: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *extraversion* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Extraversion has been reported as an accurate predictor of performance in certain tasks but not for overall job performance (Barrick and Mount 1993, Barrick et al. 2001). Hypothesis five tested the effect of extraversion on the student's assessment of the possibility of fraud as the presence of risk factors increased. Table 10, Panel B, reports the results for this test. The results do not support the expectation that extraversion would positively effect the assessment of the possibility of fraud. Additional sensitivity analyses were performed on the interaction of conscientious and extraversion. Similar results were observed. Based on these results, hypothesis five is not supported.

Research Questions One, Two and Three: When confronted with increasing levels of fraud risk factors, individuals who possess the personality traits of *agreeableness, emotional stability and intellect* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Prior research has shown that the additional three traits in the Big Five model (agreeableness, emotional stability, and intellect) are accurate predictors of performance in certain occupations but does not suggest how these characteristics might impact overall task performance. In an unstructured auditing task, such as the case used in this experiment, any one personality trait or a combination of these traits may be helpful to an

individual's assessment of the possibility of fraud. The effect of agreeableness, emotional stability, and intellect are analyzed for research questions one through three; however, none of these three personality traits were found to be significantly associated with an individual's ability to assess the possibility of fraud. The results are reported in Table 11.

[Insert Table 11 Here]

Stage Two: The Professional Group

Descriptive Statistics

The demographic data and descriptive statistics for the professional group are reported in Table 12, and include 244 MBAs and 248 internal auditors. The mean age of the MBAs is 32 years while the mean age of the internal auditors (IAs) is 40 years. Independent sample t-tests were used to identify significant differences between the MBAs and IAs ($p < 0.05$). The IAs indicated that they had attained more formal training and read more articles on the detection of fraud than did the managers. On average, the managers had 7.7 years of full-time work experience while the internal auditors possessed 15.4 years. Over 78 percent of the IAs and 63 percent of the MBAs reported they had encountered employee theft in the workplace. Only 46.7 percent of the MBAs believed that primary responsibility for detection of fraud rests with management. However, 74.0 percent of the internal auditors believed that the management of an organization bears that responsibility. This result indicates that a significant gap exists in managers' and accountants' perceptions of who is ultimately responsible for fraud detection, at least for the sample of participants in the present study.

Based on the scenario given in this study, approximately 58 percent of the internal auditors thought that theft was occurring in the finance department while only 45 percent of the managers shared this view. Overall, the IAs had more confidence in their knowledge about fraud than the managers, which may be due to more formal training, reading more articles on fraud, and more years of full-time work experience. Over half of the MBAs and the IAs believed they could detect fraudulent activity in the workplace, and over 85 percent of each group acknowledged that it is important to know about the prevention and detection of fraud.

[Insert Table 12 Here]

Table 13 reports the descriptive statistics for goal orientation, ethical orientation, and personality traits. The mean learning goal orientation scores were higher than the mean perfomance goal orientation scores for both the managers and the internal auditors. For ethical orientation, the MBAs' mean scores were significantly higher for both idealism and relativism than the IAs mean scores. The auditors displayed higher mean scores on the personality traits of conscientiousness and emotional stability than did the MBAs ($p < .05$). However, the mangers had higher mean scores on extraversion than did the IAs.

[Insert Table 13 Here]

Hypotheses Testing

Hypothesis One: When confronted with increasing levels of fraud risk factors, individuals who have *task-related knowledge and experiences* with fraud will exhibit positive systematic variation in their assessment of the possibility of fraud.

Regression analysis was used to examine the effect of knowledge and experience on the professionals' assessment of the possibility of fraud and the results are reported in

table fourteen. The number of risk factors present is statistically significant for the professionals, which suggests that as the number of risk factors increase, individuals increase their assessment of the possibility of fraud by 7.2 percent ($t = 5.412$; $p = .000$). MAJOR was also significant in the predicted direction ($t = 2.058$; $p = .040$).

Fraud specific training results suggest that training aided in fraud detection ($t = 2.217$; $p = .027$), which supports Libby and Luft's (1993) findings that training programs are needed to acquire specific knowledge which, in turn, enhances performance. These results should be of interest to accounting firms and business entities that question the cost-benefit issues of providing fraud-specific training to their employees. Apparently, the benefit gained by employees (and organizations) is worth the cost associated with attending training programs.

The effect of full-time work experience on an individual's assessment of the possibility of fraud was marginally significant ($t = 1.870$; $p = .062$). One would expect that full-time work experience would aid an individual in the assessment of fraud. Full-time work implies that employees are in the work environment a significant number of hours each week and would be exposed to a wide variety of learning experiences that would allow them to more quickly notice when fellow employees are engaged in unusual behavior, thus signaling potential employee misconduct. Vera-Munoz et al. (2001) used a two-stage task to examine the effect of experience on performance. In Stage One, the results showed that broad accounting experience helps an individual to develop and access an appropriate knowledge structure which aids performance.

[Insert Table 14 Here]

Hypothesis Two (a): When confronted with increasing levels of fraud risk factors, individuals who have a higher *learning goal orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

The results for this hypothesis are reported in Table 15. For the professionals, the effect of LGO was not statistically significant. Perhaps this result may be explained, in part, by VandeWalle et al.'s (1999) longitudinal study that examined the effect of goal orientation on sales performance. Although the researchers found a positive association between LGO and sales performance, the results showed that successful job performance takes more than just desire. Individuals have to acquire the skills necessary to perform the task. In the present study, over 85 percent of the participants believe fraud is an important topic, but this does not necessarily translate into having the needed skills to accurately perform the task. Less than 60 percent of both managers and internal auditors report that they believed they could detect employee fraud. Based on the results reported in Table 15, hypothesis two (a) is not supported.

[Insert Table 15 Here]

Hypothesis Two (b): When confronted with increasing levels of fraud risk factors, individuals who have a higher *performance goal orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

The extant literature on goal orientation reports that individuals who possess a performance goal orientation (PGO) prefer simple tasks and expend less effort than a learning goal oriented individual (Fisher and Ford 1998, Johnson et al. 2000). For example, VandeWalle (1999) found that PGO was not associated with sales performance. Johnson et al. (2000) found that individuals with a PGO performed better on a simple task. These studies may help explain the performance of individuals with a performance goal orientation as it relates to fraud detection, since this is a complex, unstructured task.

Table 15 also reports the effect of PGO on the subject's assessment of the possibility of fraud. As predicted, the effect of PGO on the subject's assessment of the possibility of fraud was not significant for the professional group. Hypothesis two (b) is supported.

Hypothesis Three (a): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of an *idealistic ethical orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

The results for hypothesis three (a) are reported in Table 16. The expectation was that a higher idealistic ethical orientation would aid the participants in this study to more readily recognize the many clues available in the experimental materials and become skeptical about the possibility that fraud may be occurring. The results do not support this expectation.

Idealism and relativism have proven to be important explanatory variables for ethical decision making in many business contexts (e.g. Barnet et al. 1998, Douglas and Wier, 2000). In this study, idealism did not have a significant impact on fraud assessment so while idealism may be successful in predicting ethical decision making, it appears it is not an explanatory construct for audit decision making. This finding is supported by Eastman et al. (2001) in which the results found that ethical ideology was not related to ethical behavior intentions.

Also, as with Shaub et al. (1993), perhaps the clues were not apparent enough to the participants. Another possibility as mentioned in the student analysis is the numerous corporate scandals over the past few years. The enormity of the losses from those corporate scandals may have desensitized the professionals to the risk factors that were present in the background information and the scenario they read.

[Insert Table 16 Here]

Hypothesis Three (b): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of a *relativist ethical orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

Table 16 also reports the results of hypothesis three (b). The subjects with more of a relativist ethical orientation exhibited no systematic variation in their assessment of the possibility of fraud. Thus, hypotheses three (b) is supported.

Hypothesis Four: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *conscientiousness* will exhibit positive systematic variation in their assessment of the possibility of fraud.

In a meta-analytic study, Barrick et al. (2001) claimed conscientiousness was an accurate predictor of overall job performance, and Barrick and Mount (1993) reported that conscientious managers performed better in an autonomous environment than managers who did not possess this trait. Table 17, Panel A, reports the results for the professional group of the effect of conscientiousness on an individual's assessment of the possibility of fraud. The results for the professional group do not provide support for hypothesis four.

Robertson et al. (2000) examined the effect of conscientiousness on overall job performance and found a statistically non-significant relationship. Robertson et al. suggest that a multi-faceted view of personality should be used to examine performance by including many traits and the interaction of these traits. The study implies that traits other than the five measured by the Big Five personality inventory should be used to test overall job performance.

[Insert Table 17 Here]

Hypothesis Five: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *extraversion* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Table 17, Panel B, conveys the results for extraversion. The effect of extraversion on an individual's assessment of the possibility of fraud is not significant for the professional group. Barrick and Mount (1993) suggested that extraversion is positively associated with overall job performance in an autonomous work environment. However, Barrick et al. (2001) claim that the effect of extraversion is not an accurate predictor of overall job performance but has been associated with success in training performance, managerial jobs, and police occupations. Fraud assessment may not be representative of a job for which extraversion is an accurate predictor of overall job performance.

Research Questions One, Two and Three: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of agreeableness will exhibit positive systematic variation in their assessment of the possibility of fraud.

Barrick et al. (2001) performed a meta-analytic study and found that agreeableness was an accurate predictor of teamwork success; emotional stability was marginally significant with overall job performance; and intellect was positively associated with training performance. In the present study, the effect of these three personality traits was analyzed to determine the impact they might have on an individual's assessment of the possibility of fraud. The results are reported in table eighteen, and none of these personality traits was a significant predictor of performance as measured in the present study (assessment of fraud).

[Insert Table 18 Here]

Stage Three: The Internal Auditors

Stage Three analyzes only the internal auditors to examine these participants within the context of the expanded version of the expert-novice paradigm, as developed by the medical profession. Researchers in the medical field expanded the expert-novice paradigm to include intermediates to explain the progressive levels of performance and decision making as an individual moves from novice to expert. For purposes of this study, sixteen internal auditors (with expert status) were asked to define the years of experience they would use to classify auditing professionals as novices, intermediates, and experts. Based on discussions with these experts, the following scale was developed: novices are those internal auditors with one to three years of experience; intermediates are those with four to eight years of work experience; and experts are internal auditors who have more than nine years of experience.

The number of auditors that comprise each experience level is as follows: 34 auditors are considered novices, 43 auditors are classified as intermediates, and 171 auditors are identified as experts. Table 19 reports the average years of experience for each experience level of the internal auditors who are employed at profit entities (162 auditors) and not-for-profit entities (86 auditors).

[Insert Table 19 Here]

In the auditing literature, a number of studies have examined knowledge and experience as determinants of expertise and have reported predictable results in determining expert status (e.g., Ashton 1991, Libby and Luft 1993, Tan and Libby 1997). In these studies, experience is measured by the number of years of work experience the individual has accumulated, and the classification has been strictly dichotomous (novice

or expert). The assumption is that the experts have more years of work experience than the novices, and consequently, have developed more knowledge that will allow them to perform better than a novice.

To date, Christ (1993) is the only auditing researcher who has examined levels of performance, classifying the participants into three experience levels (groups) based on their position in the accounting firm (junior staff, senior staff, and managers/partners). Christ found that a difference may exist in problem representations formed by each group. However, she did not actually identify the levels of expertise as does the medical research (novice-intermediate-expert).

The present study analyzes the effect of these three experience levels on the auditors' assessment of the possibility of fraud as risk factors increase. Based on the medical literature, the expectation in the present study is that as a professional accountant progresses from novice to intermediate to expert, the individual will be more successful in performing the task. Specifically, as internal auditors' progress in their careers, they should more accurately identify the warning signs associated with fraud and assess the possibility of fraud at higher levels as the number of risk factors increases in the work environment. The results of this examination are reported in Table 20.

[Insert Table 20 Here]

The results indicate that as the internal auditors progress in their careers, the level of expertise has a positive and statistically significant effect on the auditor's assessment of the possibility of fraud ($t = 1.991$; $p = .048$) as risk factors increase. Practically speaking, this means that intermediate-level auditors will tend to assess the possibility of fraud 4 percent higher than novices, and experts will assess the possibility 4 percent

higher than intermediates. Thus, the internal auditors are developing their professional skepticism as they become more experienced on the job.

These results support previous findings in the auditing literature that claim as professionals progress in their careers, performance improves (Frederick 1991, Tubbs 1992). These results also support studies in the extant medical literature that performance accuracy increases with experience (e.g., Schmidt and Boshuizen 1993a and 1993b, Rickers et al. 2000, van de Wiel et al. 2000). This finding is also intuitively appealing. One would expect that as a professional's years of experience increases, the individual should be more likely to recognize unusual behavior exhibited by co-workers than an individual with fewer years of full-time work experience or those who are entry-level employees.

In Stages One and Two, hypotheses one through five and research questions one through three were tested for the student group and the professional group, respectively. The five hypotheses and three research questions are now examined for only the internal auditors.

Hypotheses Testing

Hypothesis One: When confronted with increasing levels of fraud risk factors, individuals who have *task-related knowledge and experiences* with fraud will exhibit positive systematic variation in their assessment of the possibility of fraud.

Table 21 reports the results for hypothesis one. The coefficient for risk factors (RF) is positive and statistically significant. This suggests that, as risk factors increase, internal auditors will tend to increase their assessment of the possibility of fraud by almost 11 percent. The results also suggest that full-time work experience is marginally significant ($t = 1.783$; $p = .076$).

The effect of previous exposures to employee theft in the workplace was statistically significant ($t = 2.891$; $p = .004$). Apparently, internal auditors who have personally encountered employee theft in a past work environment are more sensitive to the warning signs of fraudulent activity. Each exposure should lead to increased task specific knowledge so that future encounters with employee wrong-doing should more quickly and accurately be identified. Overall, these results suggest that previous exposure with employee theft does enhance an individual's capabilities for fraud detection. These findings support the extant literature that reports the benefits of task-specific experience (e.g., Bonner and Lewis 1990).

Based on these results, hypothesis one is supported for risk factors, full-time work experience, and previous exposure to employee theft.

[Insert Table 21 Here]

Hypothesis Two (a): When confronted with increasing levels of fraud risk factors, individuals who have a higher *learning goal orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

LGO is characterized by persistence, attempting challenging tasks, and using complex learning strategies. For example, Bell and Kozlowski (2002) used an unstructured, complex task to examine the effects of LGO on performance and found LGO to be significantly associated with performance. These same characteristics should be valuable to an individual who is confronted with an unstructured, complex task, such as the one used in this study. The results for hypothesis two (a) are detailed in Table 22. For the internal auditors, the effect of LGO was statistically significant ($t = 3.957$; $p = .000$), which suggests that those auditors who tend to be more learning goal oriented are

more likely to assess the possibility of fraud at a slightly higher level (1 percent) as risk factors increase. These results suggest support for hypothesis two (a).

[Insert Table 22 Here]

Hypothesis Two (b): When confronted with increasing levels of fraud risk factors, individuals who have a higher *performance goal orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

As discussed in the literature review, individuals who tend to be more performance goal oriented (PGO) generally perform better on a simple, consistent task (Johnson et al. 2000). Since this study uses a complex, unstructured task, individuals with a PGO are not expected to be as successful in assimilating the clues associated with fraudulent activity. Thus, the participants should not exhibit systematic variation in their assessment of fraud. The results, reported in Table 22, support this expectation ($t = .366$; $p = .714$). This finding is consistent with the existing body of literature that suggests PGO is either not related or is negatively related to performance (VandeWalle et al. 1999, Bell and Kozlowski 2002).

Hypothesis Three (a): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of an *idealistic ethical orientation* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Previous studies have examined the effect of ethical orientation on decision making performance (e.g., Arrington and Reckers 1985, Douglas and Wier 2000). The expectation is that individuals with an idealistic ethical orientation will identify factors that cause individuals harm. As this pertains to the present study, when risk factors increase, individuals with more of an idealistic ethical orientation might also more readily identify the clues associated with employee wrong-doing, and if this is true, they may

also assess the possibility of fraud at a higher level as risk factors increase. The results are depicted in Table 23 and do not support the hypothesis. As mentioned in Stages One and Two, perhaps the employee theft ($10,000) was not significant enough to arouse the auditor's level of skepticism.

[Insert Table 23 Here]

Hypothesis Three (b): When confronted with increasing levels of fraud risk factors, individuals who tend to have more of a *relativist ethical orientation* will exhibit no systematic variation in their assessment of the possibility of fraud.

Table 23 also reports the results for hypothesis three (b). As predicted, the accounting professionals with more of a relativist ethical orientation exhibited no systematic variation in their assessment of the possibility of fraud. Relativists reject absolute moral rules for decision making and concentrate on the parameters in a given situation. Prior studies have shown that relativists believe it is more acceptable to engage in certain questionable behaviors than idealists, i.e., if significant harm does not occur to the organization or individuals (Douglas and Wier 2000, Winter et al. 2004). Thus, the relativists may have ignored the potential for fraudulent activity. Based on the results, hypothesis three (b) is supported.

Hypothesis Four: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *conscientiousness* will exhibit positive systematic variation in their assessment of the possibility of fraud.

The results obtained in the present study for conscientiousness and performance are reported in Table 24, Panel A and were not as predicted. As pointed out in the analysis of Stage Two (professional group), Robertson et al. (2000) and Ferguson et al. (2003) found that conscientiousness was not an accurate predictor of success for all tasks.

Specifically, Ferguson et al. (2003) suggested that conscientiousness predicted success in tasks that are organized and repetitious. Thus, conscientiousness may not be an accurate predictor of fraud assessment capabilities. The results obtained from this test provide no support for hypothesis four.

[Insert Table 24 Here]

Hypothesis Five: When confronted with increasing levels of fraud risk factors, individuals who possess the personality trait of *extraversion* will exhibit positive systematic variation in their assessment of the possibility of fraud.

Table 24, Panel B, reports the results for this hypothesis. The results do not support the expectation that extraversion will positively affect performance in the task that was used in this study (assessment of the possibility of fraud). Thus, hypothesis five is not supported.

Research Questions One, Two and Three: When confronted with increasing levels of fraud risk factors, individuals who possess the personality traits of *agreeableness, emotional stability* and *intellect* will exhibit positive systematic variation in their assessment of the possibility of fraud.

The additional traits in the Big Five model (agreeableness, emotional stability, and intellect) are accurate predictors of performance in certain occupations (Barrick et al. 2001). However, these variables have not yet been tested in an auditing context for simple or complex tasks, so it is uncertain if any of these traits will be helpful in the complex task of assessing fraud. Any one or a combination of these personality traits may be useful to an individual in identifying the risk factors associated with fraud and then, in assessing the possibility of fraud at higher levels when risk factors increase. The results are reported in Table 25. The effect of agreeableness and emotional stability were

not significant. However, the effect of intellect was significant and positive ($t = 3.480$; $p = .001$).

While intellect has not been shown to be an accurate predictor of overall job performance, results have shown that intellect is positively related to training performance (Barrick et al. 2001). Intellect is defined by the Big Five model as a trait possessed by someone who is creative, open to experience, and broad-minded (Salgado 1997). Employees who posses this trait are expected to be curious and willing to engage in new learning experiences.

Recall from the Introduction Section that SAS 99 requires the auditor to ask more questions and gather more evidence to assess fraud risks than under SAS 82. Auditors must conduct a brainstorming session to discuss the potential for material misstatement due to fraud. Auditors must place an increased emphasis on inquiry as an audit procedure to increase the likelihood of detecting fraud. They must also expand their use of analytical procedures to gather information that will help identify the risk of fraud. Because intellect is characterized by "curious and open to new experience", it is not surprising then that this personality trait would be one that should be valuable to internal auditors. This trait should enable accounting professionals to more easily identify the warning signs associated with fraud and assess the possibility of fraud at a higher level when risk factors increase. This finding has important implications for the auditing profession as they develop training sessions and decision aids for fraud detection and prevention. The results from this test suggest support only for research question three (the personality trait of intellect).

[Insert Table 25 Here]

Structural Equation Modeling

Focusing on the primary group of interest, the internal auditors, SEM methodology is used to consider the impact of knowledge and experience, as well as ethical orientation and goal orientation on the assessment of fraud. The measured variables are in boxes and the theoretical, latent variables of interest are shown in ellipses. The research model for this analysis is depicted in Figure 3.

[Insert Figure 3 Here]

Three parcels were created for each goal orientation dimension by randomly assigning questions from the Goals Inventory. Recall that the Goals Inventory contains 16 questions, eight relate to learning goal orientation and eight relate to performance goal orientation. LGO1 includes questions 2, 7, and 14; LGO2 includes questions 4, 11, and 15; and LGO3 includes questions 5 and 13. PGO1 includes questions 3 and 12; PGO2 includes questions 1, 6, and 8; and PGO3 includes questions 9, 10, and 16.

In the structural model, the latent variable, knowledge, is measured by accounting hours, articles read, and training classes, and is influenced by learning goal orientation (LGO), performance goal orientation (PGO), and experience. Although it is not depicted on the diagram in Figure 3, there is also a residual disturbance term that represents the variation in knowledge, which is a separate parameter that is estimated. Similarly, the latent variable, experience, is measured by age and theft, and is influenced by learning goal orientation (LGO) and performance goal orientation (PGO). Experience also has variance that is an estimated parameter in the model.

The latent variable, ethical position, is measured by idealism and relativism (captured by the scores on the EPQ instrument), is directly influenced by knowledge and

experience, and is indirectly influenced by LGO and PGO. Again, this latent variable also has a variance that is an estimated parameter in the model. Risk factors is measured by only one variable (the number of risk factors that was present in the particular scenario), is directly influenced by ethical position, and is indirectly influenced by knowledge, experience, LGO, and PGO. Performance is the ultimate variable of interest in the present study and is measured by only one variable (the individual's assessment of the possibility that fraud may be occurring), is directly influenced by risk factors, and is indirectly influenced by risk factors, ethical position, knowledge, experience, LGO, and PGO. Each of these latent variables, ethical position, risk factors, and performance is assumed to have variance that is an estimated parameter in the model.

Estimates of parameters implied by the research model shown in Figure 3 were obtained using LISREL (Jöreskog and Sörbom 2005). Parameters whose t-values are larger than 1.96 in magnitude are statistically different from zero. Where possible, each latent construct was measured by two or more variables. Risk factors and performance each had a single measurement variable; therefore, the factor loadings were set to 1 and the corresponding error variances to 0. That is, each of these two variables was assumed to be measured without error to achieve identification of the model. That is, the number of estimable parameters is less than the number of data points. According to Byrne (2001), this situation results in positive degrees of freedom that allow for rejection of the model, thereby rendering it of scientific use. The parameter estimates, as well as the path coefficients for the research model used in the present study, are reported in Table 27.

[Insert Table 27 Here]

As discussed earlier (Appendix E), a number of goodness-of-fit indices are available to evaluate how well this particular model fits the data. While some of the indices are more widely reported than others, statisticians do not agree on a single overall fit measure (Breckler 1990). Accordingly, two measures are reported. First, the comparative fit index (CFI) for the research model is 0.65. Generally speaking, a good fitting model will have a CFI greater than 0.90 (Raykov and Marcoulides 2000). The second fit index is the root mean square error of approximation (RMSEA) and that is 0.10 for the research model. Browne and Cudeck (1993) maintain that a RMSEA that is less than or equal to 0.05 is desirable for a good fitting model, and less than or equal to 0.08 for an adequate fit.

Quite a number of alternative models were examined to determine the best fit while at the same time identifying the paths which were statistically significant. For example, the first model contained the personality trait of conscientiousness as well as the constructs in the current research model. The CFI for this model was .65 and the RMSEA was .13. Another model containing the same variables as the current model was tested but did not use parceling for LGO and PGO. After many other specifications of the model, the current, parceled model was a more accurate representation of the theoretical model based on the benefits of parceling described in Appendix E. Therefore, the parceled model using LGO and PGO was retained with a CFI of .65 and RMSEA of .10.

Although these fit measures indicate that the model in Figure 3 is not a particularly good fit to the data, there could be a number of reasons for this result. Latent variables are not directly observable, so measurable constructs must be used as manifestations of the latent variable. For the latent variable, knowledge, three measured

variables were used: number of accounting hours completed, articles read on fraud in the past 30 days, and training classes. These three variables have been used in prior studies of the expertise paradigm in accounting. These earlier studies used either regression or ANOVA to analyze the data, and in these methodologies, care is taken to be sure that the independent variables are not highly correlated to avoid statistical violations.

Note in Table 26 that the correlations between accounting hours, articles read, and training classes are very low. For these three constructs to be truly useful in SEM, the correlations should be at least 0.40. Clearly, these low correlations will affect the overall model fit. This is an area that could be examined in future studies – to find constructs that exhibit higher correlations for the latent variable, knowledge. Although the correlation between age and theft is significant, it is still only 0.30, which could also contribute to the problem of model fit. As well, the correlation between idealism and relativism is only 0.15.

Another issue that might have contributed to the less-than-desirable model fit is that of measurement of some of the variables. For example, the accounting hours completed is actually captured as a categorical variable ("1" for 0-3 hours completed, "2" for 4-9 hours completed, "3" for 10-18 hours completed, and "4" if the person had completed more than 18 hours). While this is an improvement over a simple dichotomous variable (MAJOR), it probably would have been a more useful variable if the participants had been asked an open-ended question that would have required the total number of hours completed by each individual. The variable would then have been more similar to a continuous variable. This too could be an improvement in future studies.

Referring again to Table 27, an interesting result may be found in Panel B. The path from LGO to experience is positive and significant, as is the path from experience to ethical position, from ethical position to risk factors, and from risk factors to performance. From the goal orientation literature, the expectation was that the path to knowledge and experience would be positive and significant. The results suggest that the internal auditors tend to be more learning goal oriented in relation to on-the-job experiences. Most likely they evaluate task performance relative to other tasks they have completed and measure success against their prior achievements in their job experiences. On the other hand, they tend to use more of a performance goal orientation as it relates to knowledge. Perhaps this tendency manifests itself when the auditors are in training classes. That is, in a "traditional" classroom setting, the auditors might evaluate their success relative to other auditors' accomplishments rather than to their own prior accomplishments.

The positive and significant path between experience and ethical position suggests that the internal auditors draw upon their work experience (measured by age and exposure to theft) to evaluate situations in the work environment and determine how they will respond. The path between ethical position and risk factors is also positive and significant. However, this might be a bit more challenging to interpret because the correlation between idealism and relativism is very low, and idealism is negative and significant. Perhaps these relationships hint that the internal auditors have become more pragmatic and skeptical from their experience and age and assess the work environment from that viewpoint. Thus, they are able to recognize more risk factors. Finally, the path between risk factors and performance is positive and significant, as expected. This

interpretation is rather straightforward – as risk factors in the workplace increase, the internal auditors will assess the probability of fraud at a higher level.

CHAPTER V

CONCLUSIONS

Contributions

Fraud continues to be a serious concern for all stakeholders of an organization. The purpose of this study was to examine the impact of certain variables on managers' and accountants' abilities to recognize misappropriation of assets as the presence of risk factors increase. The unstructured task used in this experiment to test the individual's assessment of the possibility of fraud is based on an actual case of misappropriation of assets.

Several contributions resulted from this study. In Stage One, accounting students assessed the possibility that fraud was occurring at a higher level than did the management students. This finding suggests that the accounting students acquire knowledge from the accounting curriculum that improves detection of the risk factors associated with employee theft. Many students reported that they have not read articles on fraud within the past month; however, the effect of reading articles was found to be marginally significant for assessing the possibility of fraud.

For the professional group in Stage Two, fraud specific training led to identifying the possibility of misappropriation of assets at a higher level. For organizations that are concerned about lost productivity time and the monetary costs associated with providing training sessions, it appears that the benefits from training outweigh the costs.

The results of Stage Three indicate that internal auditors who had prior experience with employee theft in the workplace were better able to identify increased levels of risk

factors which should lead to increased fraud assessment capabilities. Bonner (1990) noted that task-specific knowledge helped experienced auditors in making better decisions and that training and expert decision aids could improve auditor judgment and decision making. Task specific knowledge is gained through exposure to previous episodes of fraud in the workplace. Therefore, organizations might consider the content of current training programs and incorporate examples of actual instances of fraud to aid auditors in the development of task specific knowledge. The effect of full-time work experience was significant for the internal auditors.

This study also examined expertise development by classifying only the internal auditors (Stage Three) into categories based on years of full-time work experience. Based on discussions with experts in internal auditing, the participants in the internal auditor group were classified as novices, intermediates, or experts so that the impact of career progression from novice to expert could be tested. A statistically significant impact was observed. That is, based on these findings, training programs should be developed for specifc experience levels to help shorten the learning curve for internal auditors.

Based on the results in Stage Three, the predominant goal orientation exhibited by an individual may have important implications for training programs. As discussed in the Literature Review section, goal orientation impacts performance in training and the transfer of skills obtained in training programs to the workplace. Employees with a learning goal orientation (LGO) are more willing to learn new skills, participate in training programs, and perform better on complex tasks than performance goal oriented employees. When the effect of LGO was tested for the internal auditors, the results were statistically significant. Based on the fact that fraud detection is considered a complex task, internal auditors who are given extensive

training and have access to expert decision aids should be more successful in using these tools to identify risk factors and be more alert to the possibility that fraud may be occurring as risk factors increase.

Stage Three produced favorable results for the effect of the personality trait of intellect on fraud assessment. Based on SAS 99, auditors must place an increased emphasis on inquiry as an audit procedure and use additional analytical procedures to gather information that will help identify the risk of fraud. The personality trait of intellect should allow accounting professionals to more easily identify the clues associated with employee theft and assess the possibility of fraud at a higher level when risk factors increase.

The results of the structural equation modeling (SEM) analysis generally support the results of previous studies of audit performance (e.g. Wright 2001, Vera-Munoz et al. 2001, Thibodeau 2003). However, several others findings of this analysis extend the audit decision making literature by showing certain factors that enhance knowledge and improve decision making as experience increases. In the present study, goal orientation and ethical orientation were both found to have positive and significant effects on performance. Specifically, learning goal orientation has an indirect impact through experience, and ethical position mediates the impact of experience on the ability to recognize risk factors. Thus, higher LGO scores, mediated by experience and ethical position, should lead to more accurate identification of risk factors that are commonly associated with fraudulent activity.

Limitations

Experiments using human subjects have a number of limitations. One such limitation is the choice of subjects that were used in the experiment. The undergraduate students who participated in this study were enrolled at four large universities and three liberal arts colleges in the Southeast. These educational institutions all have diverse student bodies, so the students should be representative of student populations; however, the universities were all located in the same geographical region. This could present a limitation if the subjects are not representative of students in other parts of the United States. The MBA students studied at three universities. Although all of the MBA students had at least one year of professional experience, to the extent that they differ from experienced managers in their decision making processes and capabilities, the results may lack external validity.

Another limitation could be the unstructured task used in the experiment. It was based on an actual case of misappropriation of assets in a governmental entity, which may not be an entity with which the students are familiar, since for-profit organizations are usually the form of business studied in auditing courses. The difference between profit/not-for-profit organizations could have confused some students.

Since the experiment required an extensive number of subjects, the experiment was given to students over the fall semester. Due to the time lag, a limitation may exist in that some subjects could have talked with students in other classes. To mitigate this problem, data from subjects at the same school were collected as quickly as possible.

Future Research

This research used internal auditors and managers to represent the professional group. Future studies might separate the internal auditors and management into professionals by industry segments or business type (for profit, government, and not-for-profit organizations). The impact of the independent variables in this study on performance could be examined using managers from specific industries or tested using auditors with specific industry experience to determine if a different outcome is observed. Also, researchers might choose to group managers by experience levels to analyze differences at various stages of their professional career.

Future studies could use external auditors to examine the effect of the independent variables on fraud assessment capabilities. The responsibility to detect fraud has increased for external auditors based on the recent regulations and standards issued by the government and professional organizations. Additional studies could also be conducted to examine the impact that the intermediate effect has on performance. A longitudinal study could be performed that tracks cognitive development of individuals as they enter the accounting profession and progress in their careers. Important information could be acquired that shows how task specific knowledge is gathered, stored, and retrieved at each level of professional development.

Regarding the structural equation modeling analysis, a variety of issues were discussed that might warrant further consideration in future studies. Specifically, more attention should be given to the measurement variables to find constructs that are highly correlated to represent a latent variable. In addition, to the extent possible, the measurement variables should tend more towards being continuous variables.

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APPENDIX A

Instructions:

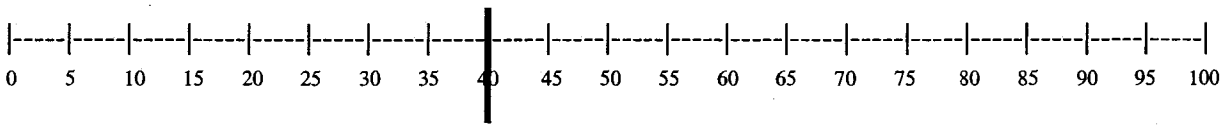
1. First, read the "Background Information." This is introductory information on a small city located in the southeast.

2. After reading the Background Information, please read the Scenario. Using these two pieces of information, please answer the seven questions that follow the Scenario.

3. Each question asks you to make an assessment. There are no right answers, only your opinion based on the information presented. Please use a scale of 0% to 100% as follows:

EXAMPLES:

If you think the probability is 40%, put a mark on the line as follows.



probability is LOW

probability is HIGH

If you think the probability is 62%, put a mark as follows.

probability is LOW

probability is HIGH

4. When you finish answering the questions, please put the information and your answers into the yellow envelope.

5. Indicate to me that you are finished and I will pick up your yellow envelope of materials and exchange that for the last part of this exercise. This last part only takes about 8-10 minutes.

THANK YOU VERY MUCH!

BACKGROUND INFORMATION

Stan Stevens was pleased. He recently accepted the position of Finance Director of a small city in the southeast with a population just over 60,000. The city has been growing steadily over the past several decades, and collected over $80 million in gross operating revenues during the last fiscal year.

Stan's picture has already appeared on the front page of the business section of the local newspaper. In the interview for that feature article, Stan shared his vision for the future of the Finance Department and identified a number of long-term goals he hoped to achieve. However, Stan noted that initially he planned to focus his attention and efforts on a variety of day-to-day concerns he had about the Finance Department.

First, he plans to streamline procedures in the department by eliminating certain accounts that are rarely used. He also wants to improve the efficiency of his department so that information can be provided quickly when needed by citizens or other city agencies, thus increasing outsiders' confidence in the department. Stan is particularly keen about addressing the problem of employee turnover. Five of the seven employees in the department have been with the city for less than a year. Stan has been told that the prior Finance Director was very controlling and task-oriented, and that this may have caused department staff to seek employment elsewhere.

Stan noted that the City does not have an internal audit staff, but a local accounting firm has been the Independent Auditor of the City's Comprehensive Annual Financial Report (CAFR) for more than a decade.

In addition to Stan, the Finance Department includes the following employees:

1. Linda North, Chief Accountant. She manages and maintains the General Ledger. Linda is also responsible for general office management and day-to-day operations in the department. Employed by the department for 15 years, Linda is 37. Her husband owns a janitorial service in town and she is the bookkeeper for her husband's business.

2. Mary West, Senior Accountant. She is responsible for monitoring fixed assets. She also maintains all records of city fixed/real assets and maintains/monitors all city construction and acquisition of real asset contracts. Employed by the Department for 8 months, Mary is 39. Her husband is employed by the US Post Office.

3. Wesley Joines, Staff Accountant. He is the Cash Manager. Wesley also maintains bank relations, monitors all city investments and debt service requirements, and performs all wire transfers of city funds. Employed by the Department for 7 months, Wesley is 32. His wife is a teacher at the local high school.

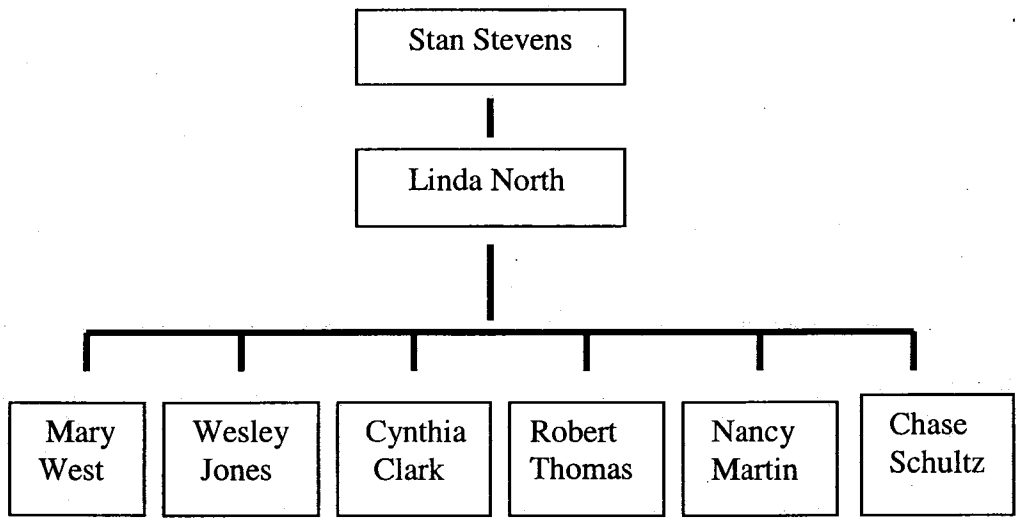
4. Cynthia Clark, Staff Accountant. She maintains all records pertaining to Accounts Receivable, invoices those who owe funds, maintains control of all Petty Cash Funds within the city, accounts for all daily deposits from departments and divisions within the city, and is also the secondary payroll clerk. Employed by the Department for almost 9 months, Cynthia is 38 and her husband is a principal at one of the elementary schools.

5. Robert Thomas, Accounts Payable Clerk. He processes all city payments to payees for last names beginning with A through L. Employed by the Department for 20 months, Robert is 36, single, and has lived in town his whole life except for the 4 years he served in the US Navy.

6. Nancy Martin, Accounts Payable Clerk. She processes all city payments to payees for last names beginning with M through Z. Employed by the Department for 7 months, Nancy is 26 and a single parent. She lives in the suburbs.

7. Chase Schultz, Payroll Clerk. He processes all bi-weekly and monthly payrolls and maintains all payroll records. Chase is 31, recently divorced, and has been employed by the Department for 7 months. He lives in an older neighborhood of the city.

ORGANIZATIONAL CHART for the FINANCE DEPARTMENT



SCENARIO # 1

- Over the past four months, Stan has asked Linda several times to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. The controls have just recently been implemented, and Linda has complained repeatedly about how slowly Mary performs this task. Linda says that Mary is holding up the payments to suppliers, so Linda has volunteered to check Nancy's and Robert's work this week to see how long it would take her to do it.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary is concerned. She is reviewing Nancy's and Robert's work and Mary cannot locate the supporting documents for a $10,000 check on Robert's check register. The check appears to be missing also.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda has not taken any vacation for the past two years. She maintains this is necessary because there are so many new employees. Linda does appear to be busy. She is consistently the first to arrive at work each day and the last to leave at night. However, Linda is at the point where she will lose a lot of vacation days, so Stan has insisted that she take vacation. Linda agreed to do this, but takes only one day at a time.

SCENARIO # 2

- Over the past four months, Stan has asked Linda several times to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. The controls have just recently been implemented, and Linda has complained repeatedly about how slowly Mary performs this task. Linda says that Mary is holding up the payments to suppliers, so Linda has volunteered to check Nancy's and Robert's work this week to see how long it would take her to do it.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary is concerned. She is reviewing Nancy's and Robert's work and Mary cannot locate the supporting documents for a $10,000 check on Robert's check register. The check appears to be missing also.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda and her husband spent a week at the beach earlier this year.

SCENARIO # 3

- Over the past four months, Stan has asked Linda several times to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. The controls have just recently been implemented, and Linda has complained repeatedly about how slowly Mary performs this task. Linda says that Mary is holding up the payments to suppliers, so Linda has volunteered to check Nancy's and Robert's work this week to see how long it would take her to do it.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary reviews Nancy's and Robert's work and notes that all checks and supporting documents are accounted for this week.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda has not taken any vacation for the past two years. She maintains this is necessary because there are so many new employees. Linda does appear to be busy. She is consistently the first to arrive at work each day and the last to leave at night. However, Linda is at the point where she will lose a lot of vacation days, so Stan has insisted that she take vacation. Linda agreed to do this, but takes only one day at a time.

SCENARIO # 4

- Over the past four months, Stan has asked Linda several times to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. The controls have just recently been implemented, and Linda has complained repeatedly about how slowly Mary performs this task. Linda says that Mary is holding up the payments to suppliers, so Linda has volunteered to check Nancy's and Robert's work this week to see how long it would take her to do it.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary reviews Nancy's and Robert's work and notes that all checks and supporting documents are accounted for this week.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda and her husband spent a week at the beach earlier this year.

SCENARIO # 5

- Four months ago, Stan asked Linda to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. Linda designed some controls that met Stan's expectations and the controls have been in place for three months.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary is concerned. She is reviewing Nancy's and Robert's work and Mary cannot locate the supporting documents for a $10,000 check on Robert's check register. The check appears to be missing also.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda has not taken any vacation for the past two years. She maintains this is necessary because there are so many new employees. Linda does appear to be busy. She is consistently the first to arrive at work each day and the last to leave at night. However, Linda is at the point where she will lose a lot of vacation days, so Stan has insisted that she take vacation. Linda agreed to do this, but takes only one day at a time.

SCENARIO # 6

- Four months ago, Stan asked Linda to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. Linda designed some controls that met Stan's expectations and the controls have been in place for three months.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary is concerned. She is reviewing Nancy's and Robert's work and Mary cannot locate the supporting documents for a $10,000 check on Robert's check register. The check appears to be missing also.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda and her husband spent a week at the beach earlier this year.

SCENARIO # 7

- Four months ago, Stan asked Linda to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. Linda designed some controls that met Stan's expectations and the controls have been in place for three months.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary reviews Nancy's and Robert's work and notes that all checks and supporting documents are accounted for this week.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda has not taken any vacation for the past two years. She maintains this is necessary because there are so many new employees. Linda does appear to be busy. She is consistently the first to arrive at work each day and the last to leave at night. However, Linda is at the point where she will lose a lot of vacation days, so Stan has insisted that she take vacation. Linda agreed to do this, but takes only one day at a time.

SCENARIO # 8

- Four months ago, Stan asked Linda to develop controls over the accounts payable function for the City. The prior Finance Director had abolished these controls because she thought they were unnecessary. However, Stan knows they are important, so he wants TWO checks: (1) each accounts payable clerk (Nancy and Robert) to check the other's work, and (2) the senior accountant (Mary) to check the work of BOTH of the accounts payable clerks. Linda designed some controls that met Stan's expectations and the controls have been in place for three months.

- Each Tuesday evening, the City runs checks for the invoices that are due that week. Then, on Wednesday morning, the accounts payable clerks verify the amount of each check with the register and also confirm that all supporting documents are attached. After Mary reviews the registers and documentation, the checks are mailed out to the vendors. Mary reviews Nancy's and Robert's work and notes that all checks and supporting documents are accounted for this week.

- Robert and Linda are the only employees who have been with the Department long enough to accrue any vacation time. Robert just returned from a four-day vacation hiking in the Big Bend area. Linda and her husband spent a week at the beach earlier this year.

Scenario Answer Sheet **Your ID #** _____

1. Do you think Linda believes Mary is a competent employee?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

probability is LOW — probability is HIGH

2. Do you think Stan is trying to push off some of his work on Linda?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

probability is LOW — probability is HIGH

3. Do you think Robert is a competent employee?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

probability is LOW — probability is HIGH

4. Do you think an unintentional error has occurred in the Finance Department?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

probability is LOW — probability is HIGH

5. If you think an error has occurred, <u>what is it</u>? _____

_____

6. Do you think it is possible that employee theft of assets may be occurring in the Finance Department?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

probability is LOW — probability is HIGH

7. If you think theft may be occurring, who do you think it is? _____

Additional Information (Form S) ID NUMBER: _____

1. **From the Scenario and Background Information you just read, did Stan have to ask Linda several times to develop controls over accounts payable?**
   ____ YES ____ NO ____ Don't Remember

2. **From the Scenario and Background Information you just read, was a $10,000 check missing?**
   ____ YES ____ NO ____ Don't Remember

3. **From the Scenario and Background Information you just read, did Linda take a week-long vacation to the beach?**
   ____ YES ____ NO ____ Don't Remember

4. **What is your major?** ____ **management** ___ **accounting** ___**other**

5. **Current class (please circle one):**

Freshman Sophomore Junior Senior 5th Year (or more)

6. **YEAR you were born?** _____

7. **How many undergraduate accounting hours have you completed (please check only one)?**
   ____ 0-3 hrs ___ 4-9 hrs ____10-18 hrs ____ more than 18 hrs

8. **Do you have any work experience?** ____ **YES** ____ **NO**
   If yes, is it: _____ Part-time _____ Full-time

   How many years of FULL-TIME work experience do you have (even if you are not currently working)? _____
   Is your work experience primarily: ____ **management** ____ **accounting** ____ **other**

9. **If you have Full-Time work experience, in what kind of organization was the experience?**
   _____ for-profit entity _____ governmental entity _____ not-for-profit

10. **Have you ever worked for an organization that had an employee theft occur?**
    ____ **YES** ____ **NO**

11. **Has the topic of employee theft been discussed in any of your college classes?**
    ____ **YES** ____ **NO**

12. Have you attended any training on the topic of employee theft? ____ YES ____ NO

If yes, how many courses?
____ 1-3 ____ 4-6 ____ 7-10 ____ more than 10

13. Have you read about employee theft in a local newspaper, the Wall Street Journal, news magazine (like Newsweek), or similar sources? ____ YES ____ NO

If yes, how many articles would you say that you've read in the past month?
____ 1-2 ____ 3-4 ____ 5-6 ____ more than 6

14. How knowledgeable are you about employee theft?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Knowledgeable — Extremely Knowledgeable

15. Do you think you are knowledgeable enough about employee theft that you could detect such activity if it occurred at your place of employment?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Never Would Detect — Absolutely Would Detect

16. If employee theft occurred in an entity, who has the primary responsibility for detecting it? PLEASE CIRCLE ONLY ONE.

company management company employees internal auditor external auditor

17. How important is it to know about employee theft (prevention and detection)?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Important — Extremely Important

Please check to be sure you have answered all of the questions.
Thank you!

Additional Information (Form M) **ID NUMBER: _____**

1. **From the Scenario and Background Information you just read, did Stan have to ask Linda several times to develop controls over accounts payable?**
   ____ YES ____ NO ____ Don't Remember

2. **From the Scenario and Background Information you just read, was a $10,000 check missing?** ____ YES ____ NO ____ Don't Remember

3. **From the Scenario and Background Information you just read, did Linda take a week-long vacation to the beach?** ____ YES ____ NO ____ Don't Remember

4. What was your undergraduate major? ____ **management** ____ **accounting** ____ **other**

5. **YEAR you were born?** _____

6. **How many college-level accounting hours have you completed (please check only one)?**

   ____ 0-3 hrs ____ 4-9 hrs ____10-18 hrs ____ more than 18 hrs

7. **How many years of FULL-TIME work experience do you have?** _____

   Is your experience in a: _____ for-profit entity ___ governmental entity ___ not-for-profit

   Is your work experience primarily: ____ management ____ accounting ____ other

8. **Have you ever worked for an organization that had an employee theft occur?**

   ____ **YES** ____ **NO**

9. **Have you ever heard (or read about) an employee theft in another organization?**

   ____ **YES** ____ **NO**

10. **Have you attended any training on the topic of employee theft? ____ YES ____ NO**

    If yes, how many courses?
    ____ 1-3 ____ 4-6 ____ 7-10 ____ more than 10

11. Have you read about employee theft in a local newspaper, the Wall Street Journal, news magazine (like Newsweek), or similar sources? ____ YES ____ NO

If yes, how many articles would you say that you've read in the past month?
____ 1-2 ____ 3-4 ____ 5-6 ____ more than 6

12. How knowledgeable are you about employee theft?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Knowledgeable — Extremely Knowledgeable

13. Do you think you are knowledgeable enough about employee theft that you could detect such activity if it occurred at your place of employment?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Never Would Detect — Absolutely Would Detect

14. If employee theft occurred in an entity, who has the <u>primary</u> responsibility for detecting it? <u>PLEASE CIRCLE ONLY ONE</u>.

company management company employees internal auditor external auditor

15. How important is it to know about employee theft (prevention and detection)?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Important — Extremely Important

<u>Please check to be sure you have answered all of the questions</u>.

<u>Thank you!</u>

Additional Information (Form A) ID # _____

1. **From the Scenario and Background Information you just read, did Stan have to ask Linda several times to develop controls over accounts payable?**
   ____ YES ____ NO ____ Don't Remember

2. **From the Scenario and Background Information you just read, was a $10,000 check missing?** ____ YES ____ NO ____ Don't Remember

3. **From the Scenario and Background Information you just read, did Linda take a week-long vacation to the beach?** ____ YES ____ NO ____ Don't Remember

4. What was your undergraduate major? ____ **management** ____ **accounting** ____ **other**

5. **YEAR you were born?** _____

6. **How many college-level accounting hours have you completed (please check only one)?**
   ____ 0-3 hrs ____ 4-9 hrs ____10-18 hrs ____ more than 18 hrs

7. **How many years of FULL-TIME work experience do you have?** _____
   Is your experience in a: ___ for-profit entity ___ governmental entity ___ not-for-profit
   Is your work experience primarily: ____ **management** ____ **accounting** ____ **other**
   Are you (or have you been) an IT Auditor? _____ Yes _____ No
   → If YES, how many years of IT Auditor experience? _____

8. **Have you ever worked for an organization that had an employee theft occur?**
   ____ YES ____ NO

9. **Have you ever heard (or read about) an employee theft in another organization?**
   ____ YES ____ NO

10. **Have you attended any training on the topic of employee theft?** ____ **YES** ____ **NO**
    If yes, how many courses?
    ____ 1-3 ____ 4-6 ____ 7-10 ____ more than 10

11. Have you read about employee theft in a local newspaper, the Wall Street Journal, news magazine (like Newsweek), or similar sources? ____ YES ____ NO

If yes, how many articles would you say that you've read in the past month?
____ 1-2 ____ 3-4 ____ 5-6 ____ more than 6

12. How knowledgeable are you about employee theft?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Knowledgeable — Extremely Knowledgeable

13. Do you think you are knowledgeable enough about employee theft that you could detect such activity if it occurred at your place of employment?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Never Would Detect — Absolutely Would Detect

14. If employee theft occurred in an entity, who has the primary responsibility for detecting it? PLEASE CIRCLE ONLY ONE.

company management company employees internal auditor external auditor

15. How important is it to know about employee theft (prevention and detection)?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Not at all Important — Extremely Important

Please check to be sure you have answered all of the questions.

Thank you!

APPENDIX B
Goals Inventory

Instructions: Below are 16 concepts that describe people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the number that corresponds to your response.

Response Options:

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
1. I prefer to do things that I can do well rather than things that I do poorly.	1	2	3	4	5	6	7
2. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.	1	2	3	4	5	6	7
3. I'm happiest at work when I perform tasks on which I know that I won't make any errors.	1	2	3	4	5	6	7
4. When I fail to complete a difficult task, I plan to try harder the next time I work on it.	1	2	3	4	5	6	7
5. The opportunity to extend the range of my abilities is important to me.	1	2	3	4	5	6	7
6. I feel smart when I do something without making any mistakes.	1	2	3	4	5	6	7
7. The opportunity to do challenging work is important to me.	1	2	3	4	5	6	7
8. The opinions others have about how well I can do certain things are important to me.	1	2	3	4	5	6	7
9. I like to work on tasks that I have done well on in the past.	1	2	3	4	5	6	7
10. I like to be fairly confident that I can successfully perform a task before I attempt it.	1	2	3	4	5	6	7
11. I try hard to improve on my past performance.	1	2	3	4	5	6	7
12. I feel smart when I can do something better than most other people.	1	2	3	4	5	6	7
13. I prefer to work on tasks that force me to learn new things.	1	2	3	4	5	6	7
14. The opportunity to learn new things is important to me.	1	2	3	4	5	6	7
15. I do my best when I'm working on a fairly difficult task.	1	2	3	4	5	6	7
16. The things I enjoy the most are the things I do best.	1	2	3	4	5	6	7

APPENDIX C

Forsythe Opinion Questionnaire

Directions: Please indicate if you agree or disagree with the following items. Each represents a commonly held opinion and there are no right or wrong answers. We are interested in your reaction to such matters of opinion.

Please rate your reaction to each statement by writing a number to the left of each statement where:

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree
	1	2	3	4	5	6	7	8	9
_____ 1. People should make certain that their actions never intentionally harm another even to a small degree.	1	2	3	4	5	6	7	8	9
_____ 2. Risks to another should never be tolerated, irrespective of how small the risks might be.	1	2	3	4	5	6	7	8	9
_____ 3. The existence of potential harm to others is always wrong, irrespective of the benefits to be gained.	1	2	3	4	5	6	7	8	9
_____ 4. One should never psychologically or physically harm another person.	1	2	3	4	5	6	7	8	9
_____ 5. One should not perform an action which might in any way threaten the dignity and welfare of another individual.	1	2	3	4	5	6	7	8	9
_____ 6. If an action could harm an innocent other, then it should not be done.	1	2	3	4	5	6	7	8	9
_____ 7. Deciding whether or not to perform an act by balancing the positive consequences of the act against the negative consequences of the act is immoral.	1	2	3	4	5	6	7	8	9
_____ 8. The dignity and welfare of the people should be the most important concern in any society.	1	2	3	4	5	6	7	8	9
_____ 9. It is never necessary to sacrifice the welfare of others.	1	2	3	4	5	6	7	8	9
_____ 10. Moral behaviors are actions that closely match ideals of the most "perfect" action.	1	2	3	4	5	6	7	8	9

Please rate your reaction to each statement by writing a number to the left of each statement where:

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
_____ 11. There are no ethical principles that are so important that they should be a part of any code of ethics.	1	2	3	4	5	6	7	8	9
_____ 12. What is ethical varies from one situation and society to another.	1	2	3	4	5	6	7	8	9
_____ 13. Moral standards should be seen as being individualistic; what one person considers to be moral may be judged to be immoral by another person.	1	2	3	4	5	6	7	8	9
_____ 14. Different types of morality cannot be compared as to "rightness."	1	2	3	4	5	6	7	8	9
_____ 15. Questions of what is ethical for everyone can never be resolved since what is moral or immoral is up to the individual.	1	2	3	4	5	6	7	8	9
_____ 16. Moral standards are simply personal rules that indicate how a person should behave, and are not be applied in making judgments of others.	1	2	3	4	5	6	7	8	9
_____ 17. Ethical considerations in interpersonal relations are so complex that individuals should be allowed to formulate their own individual codes.	1	2	3	4	5	6	7	8	9
_____ 18. Rigidly codifying an ethical position that prevents certain types of actions could stand in the way of better human relations and adjustment.	1	2	3	4	5	6	7	8	9
_____ 19. No rule concerning lying can be formulated; whether a lie is permissible or not permissible totally depends upon the situation.	1	2	3	4	5	6	7	8	9
_____ 20. Whether a lie is judged to be moral or immoral depends upon the circumstances surrounding the action.	1	2	3	4	5	6	7	8	9

APPENDIX D
Factor Marker Inventory

Instructions: On this page (front and back), there are 50 phrases describing people's behaviors. Please use the following rating scale to describe how accurately each statement describes *you*. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself as honestly as possible, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the number that corresponds to your response.

		Response Options:				
		Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
1.	Am the life of the party.	1	2	3	4	5
2.	Feel little concern for others.	1	2	3	4	5
3.	Am always prepared.	1	2	3	4	5
4.	Am relaxed most of the time.	1	2	3	4	5
5.	Have difficulty understanding abstract ideas.	1	2	3	4	5
6.	Am full of ideas.	1	2	3	4	5
7.	Often feel blue.	1	2	3	4	5
8.	Feel others' emotions.	1	2	3	4	5
9.	Worry about things.	1	2	3	4	5
10.	Feel comfortable around people.	1	2	3	4	5
11.	Have a rich vocabulary.	1	2	3	4	5
12.	Don't talk a lot.	1	2	3	4	5
13.	Insult people.	1	2	3	4	5
14.	Make a mess of things.	1	2	3	4	5
15.	Have a vivid imagination.	1	2	3	4	5
16.	Like order.	1	2	3	4	5
17.	Keep in the background.	1	2	3	4	5
18.	Pay attention to details.	1	2	3	4	5
19.	Get upset easily.	1	2	3	4	5
20.	Don't like to draw attention to myself.	1	2	3	4	5
21.	Change my mood a lot.	1	2	3	4	5
22.	Take time out for others.	1	2	3	4	5
23.	Follow a schedule.	1	2	3	4	5
24.	Am not really interested in others.	1	2	3	4	5
25.	Am quiet around strangers.	1	2	3	4	5
26.	Get stressed out easily.	1	2	3	4	5
27.	Am interested in people.	1	2	3	4	5
28.	Leave my belongings around.	1	2	3	4	5
29.	Have excellent ideas.	1	2	3	4	5
30.	Am not interested in other peoples' problems.	1	2	3	4	5

	Response Options:				
	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
31. Start conversations.	1	2	3	4	5
32. Am not interested in abstract ideas.	1	2	3	4	5
33. Have little to say.	1	2	3	4	5
34. Often forget to put things back in their proper place.	1	2	3	4	5
35. Have a soft heart.	1	2	3	4	5
36. Do not have a good imagination.	1	2	3	4	5
37. Talk to a lot of different people at parties.	1	2	3	4	5
38. Get chores done right away.	1	2	3	4	5
39. Am easily disturbed.	1	2	3	4	5
40. Use difficult words.	1	2	3	4	5
41. Am exacting in my work.	1	2	3	4	5
42. Make people feel at ease.	1	2	3	4	5
43. Have frequent mood swings.	1	2	3	4	5
44. Don't mind being the center of attention.	1	2	3	4	5
45. Shirk my duties.	1	2	3	4	5
46. Am quick to understand things.	1	2	3	4	5
47. Get irritated easily.	1	2	3	4	5
48. Sympathize with others' feelings.	1	2	3	4	5
49. Seldom feel blue.	1	2	3	4	5
50. Spend time reflecting on things.	1	2	3	4	5

APPENDIX E

Structural Equation Modeling (SEM)

SEM methodology allows researchers to quantify and test theories, which are represented in models that describe and explain the phenomena under investigation (Raykov and Marcoulides 2000). These authors claim the reason SEM is widely used in many disciplines is that the researcher can explicitly account for measurement error in the observed variables (dependent and independent). They also note that this is in contrast to regression analysis, which ignores potential measurement error in all of the independent variables.

Abbott and Berninger (1993) identify four advantages of using SEM. First, researchers may test models where the latent factors are derived from multiple measures of the same construct rather than from a single measure. Second, researchers may test hypotheses about theoretically-based covariance structures among predictor and criterion latent factors. Third, SEM allows researchers to go beyond testing hypotheses about differences between means of groups to testing hypotheses about differences in structural relationships among latent factors. Finally, researchers may compare the fit of various theoretical models, based upon competing theories.

Raykov and Marcoulides (2000) identify several characteristics of SEM models that differentiate them from classical general linear modeling approaches. First, the models usually contain theoretical or hypothetical constructs that are not directly measured and probably not very well defined. Second, the models usually consider potential errors of measurement in all variables. Third, the models are usually fit to covariance or correlation matrices between all pairs of observed variables. Fourth, whereas classical methodology is usually interested in rejecting

the null hypothesis, SEM methodology is usually interested in finding a model that does not contradict the data. That is, when using SEM methodology, the researcher is interested in not rejecting the null hypothesis (that the model-implied covariance matrix is capable of perfectly reproducing the observed covariance matrix).

Special graphical notations are used to illustrate SEM models. These are called path diagrams. Measured variables are represented by squares or rectangles, and latent variables are represented by circles or ellipses. A line, termed a path, is used to represent relationships between the variables. A one-way arrow represents a directional relationship between two variables, and a two-way arrow indicates covariation between two variables (a non-directional association). A measured variable is a variable that can be directly observed and measured whereas a latent variable cannot be directly measured or observed. Latent variables are inferred from the covariance among two or more measured variables.

Generally speaking, there are five steps in constructing a SEM model. The first step, model specification, is where a model is formally stated based on theory. In the second step, the model is identified which is where a value is obtained from the observed data for each parameter in the model. Model estimation occurs in the third step. In other words, model parameters are estimated from the sample covariance matrix to generate an estimated population covariance matrix. The fourth step is assessing model fit. For the model to provide a good fit, the estimated population covariance matrix should reproduce the sample covariance matrix. That is, how well does the model represent (fit) the data that is used?

The model-fit evaluation may be assessed by using several fit indices. A broad and complex body of literature has evolved based on the concern for identifying the goodness of fit of any model for the data. These fit indices include the Chi-Square test statistic, the goodness-

of-fit index (GFI) which was the first descriptive fit index proposed, the adjusted goodness-of-fit index (AGFI), the normed fit index (NFI), the non-normed fit index (NNFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), the expected cross-validation index (ECVI), and the Akaike information criterion (AIC), which is a special kind of fit index that considers the measure of fit and the complexity of the model.

According to Raykov and Marcoulides (2000), any of these indices should be considered overall measures of fit for a particular model; however, none of these fit indices provide information about the fit of individual parts of the model. That is, a model could be seriously misspecified in some parts but fit well in other parts. To overcome this potential problem, the researcher should also examine standardized residuals (e.g., a stem-and-leaf plot or a Q plot).

Finally, in step five of SEM, the model is modified if the estimated population covariance matrix does not provide a reasonable explanation of the data. In other words, the researcher modifies the specification of the model to improve the fit. This is called a "specification search" and the purpose is to detect and correct the specification error between a proposed model and the true model characterizing the population and variables in the study (Raykov and Marcoulides 2000, p.44). Once an acceptable fit is obtained, individual parameter estimates are measured. The parameter estimates are compared to a null value and a Z-statistic is calculated. If the Z score exceeds ±1.96, the relationship is significant. The parameters are then standardized so the strength of relationship can be compared with other parameters in the model.

Recently, researchers have become interested in using parcels with SEM, reasoning that the composite score of an item parcel is more reliable than single item scores (Hagtvet and Nasser 2004). Because parcels better approximate normally continuous variables, parcels are often preferred over the single items as indicators of latent constructs. Additionally, the use of

item parcels is thought to reduce distortion of estimates. Moreover, Hagtvet and Nasser (2004) cite studies that indicate model fit is improved when parcels are used as indicators of latent constructs.

Little et al. (2002) agree that parcels offer a number of advantages to researchers. They report that item-level data has a number of disadvantages relative to parcels: lower reliability, lower communality, gives a smaller ratio of common to unique factor variance, and results in an increased possibility of distributional violations. Also, the authors maintain that using parcels allows the researcher to use fewer parameters, which is especially important when sample sizes are relatively small. Compared with item-level data, models based on data that has been parceled are more parsimonious, have less chance for residuals to be correlated or dual loading to emerge, and lead to a reduction in sampling errors.

As described in Little et al. (2002), several techniques exist to construct parcels. One method of constructing parcels is to assign each item randomly to one of the parceling groups; then depending on the number of items assigned, two or more parcels are created. This method was used in the present study to construct parcels for the goal orientation latent constructs: three measured variables for learning goal orientation (LGO1, LGO2, and LGO3) and three measured variables for performance goal orientation (PGO1, PGO2, and PGO3).

FIGURE 1
Research Model of Performance

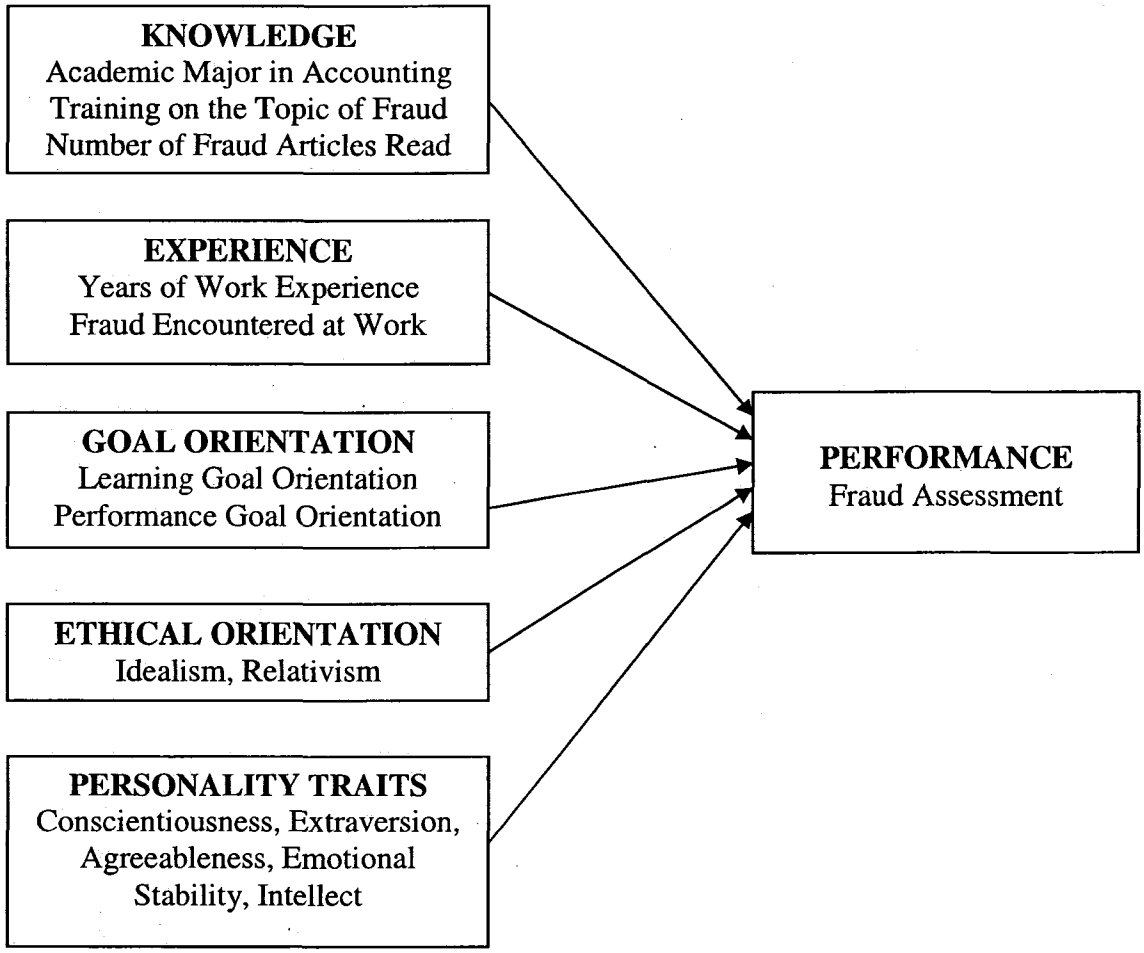


FIGURE 2
Experimental Design

A1	B1	C1	PTQ	Scenario One
A1	B1	C2	PTQ	Scenario Two
A1	B2	C1	PTQ	Scenario Three
A1	B2	C2	PTQ	Scenario Four
A2	B1	C1	PTQ	Scenario Five
A2	B1	C2	PTQ	Scenario Six
A2	B2	C1	PTQ	Scenario Seven
A2	B2	C2	PTQ	Scenario Eight

Where:
A = Risk Factor No. 1: Lack of appropriate segregation of duties or independent checks
B = Risk Factor No. 2: Lack of timely and appropriate documentation for transactions
C = Risk Factor No. 3: Lack of mandatory vacations for employees performing key control functions

1 = treatment (risk factor) – present
2 = treatment (risk factor) – absent
PTQ = Exit questionnaire that was administered posttest

All scenarios were randomly assigned to participants

FIGURE 3
Research Model for SEM Analysis

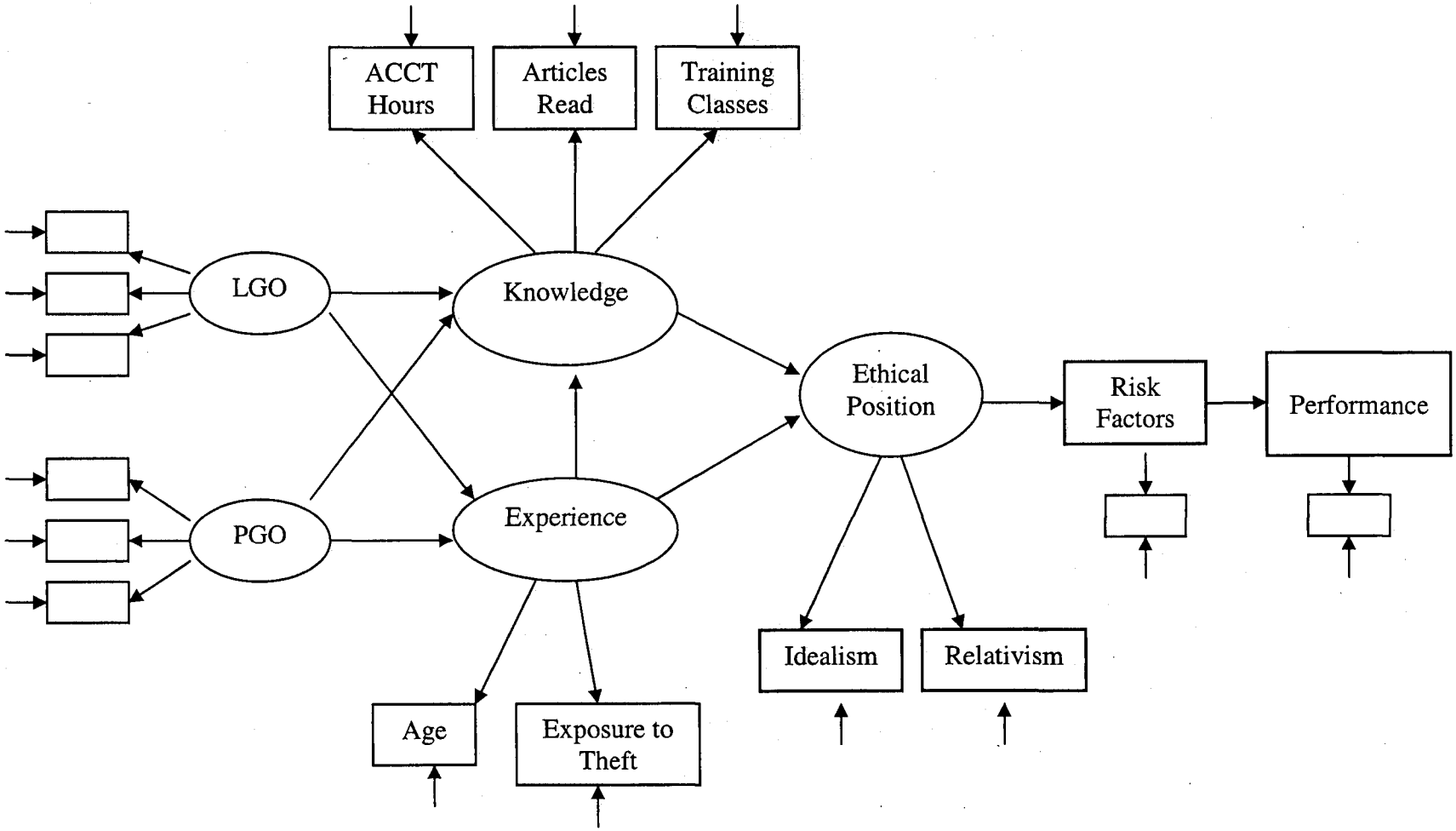


TABLE 1
Sample Identification

Group	Identification		Total Number
MGMT	Upper-Level Management Students	273	
	Delete: incomplete information	- 9	
	TOTAL:		**264**
ACCT	Upper-Level Accounting Students	262	
	Delete: incomplete information	- 4	
	TOTAL:		**258**
MBA	MBA Students with Full-Time Work Experience	282	
	Delete: incomplete information	- 14	
	full-time work experience < 1 year	- 24	
	TOTAL:		**244**
IA	Internal Auditors, Currently Working Full-Time	266	
	Delete: incomplete information	- 15	
	full-time work experience < 1 year	- 3	
	TOTAL:		**248**
	TOTAL Number of Participants		**1,014**

TABLE 2
Number of Cases by Group by Scenario

	GROUP			
Scenario	**MGMT**	**ACCT**	**MBA**	**IA**
One	31	34	30	32
Two	34	31	32	34
Three	35	31	31	30
Four	34	32	31	31
Five	33	33	30	30
Six	32	33	29	31
Seven	33	33	31	30
Eight	32	31	30	30

TABLE 3
Description of Variables

RF	Number of risk factors contained in the scenario read by the subject, ranged from 0 to 3.
Knowledge	
MAJOR	Academic major of the subject. Measured as a dichotomous variable where 1 = accounting and 0 = otherwise.
TRAINING	Whether or not the subject has had any fraud training courses, measured as a categorical variable where 4 = more than 10, 3 = 7-10, 2 = 4-6 courses, 1 = 1-3 courses and 0=none.
ARTICLES	Whether or not the subject has read any fraud articles in the past 30 days. Measured as a categorical variable, where 4 = more than 6, 3 = 5-6, 2 = 3-4, 1 = 1-2 and 0 = none.
Experience	
FULL	Number of years of full-time work experience of the subject. Limited to MBA and IA group.
THEFT	Whether or not the subject had experienced employee theft at his or her place of employment. Measured as a dichotomous variable where 1 = yes and 0 = no.
Goal Orientation	
LGO	Learning goal orientation score of the subject. Measured as a continuous variable from 0 to 56.
PGO	Performance goal orientation score of the subject. Measured as a continuous variable from 0 to 56.
Ethical Orientation	
IEO	Idealistic ethical orientation score of the subject. Measured as a continuous variable from 0 to 90.
REO	Relativistic ethical orientation score of the subject. Measured as a continuous variable from 0 to 90.
Personality Traits	
PT(C)	Personality trait of conscientiousness score of the subject. Measured as a continuous variable from 0 to 50.
PT(E)	Personality trait of extraversion score of the subject. Measured as a continuous variable from 0 to 50.
PT(A)	Personality trait of agreeableness score of the subject. Measured as a continuous variable from 0 to 50.
PT(ES)	Personality trait of emotional stability score of the subject. Measured as a continuous variable from 0 to 50.
PT(I)	Personality trait of intellect score of the subject. Measured as a continuous variable from 0 to 50.

TABLE 4
Results of Chi-Square Tests for Manipulation Checks
(n = 1014)

Panel A: Manipulation Check for Segregation of Duties*

		Correct Answer		
		YES	NO	TOTAL
Subject's	YES	357	72	429
Response	NO	156	429	585
	TOTAL	513	501	1014

Panel B: Manipulation Check for Missing Documents*

		Correct Answer		
		YES	NO	TOTAL
Subject's	YES	452	83	535
Response	NO	57	422	479
	TOTAL	509	505	1014

Panel C: Manipulation Check for Mandatory Vacations*

		Correct Answer		
		YES	NO	TOTAL
Subject's	YES	354	18	372
Response	NO	153	489	642
	TOTAL	507	507	1014

* Significant at p<.000

TABLE 5
Demographic Information and Descriptive Statistics - Student Group

	Management	Accounting
Knowledge:		
Major	264	258
Mean Age (in years)	27	26
Had the following number of training courses on fraud:		
None	71.6%	71.3%
1-3	24.6%	25.6%
4-6	3.8%	2.7%
7-10	0	.4%
More than 10	0	0
Read the following number of articles on fraud:		
None	25.4%	19.8%
1-2	51.9%	49.2%
3-4	14.4%	19.4%
5-6	3.8%	4.7%
More than 6	4.5%	7.0%
Experience:		
Experienced Theft at Work	63.3%	66.7%
Believed Primary Responsibility to Detect Fraud Rests With:		
Management	51.5%	57.2%
Employees	21.8%	29.6%*
Internal Auditor	23.7%	10.9%*
External Auditor	3.1%	2.3%
Question that the subjects were ask after reading the experimental materials:		
Theft occurring?	42.1%	58.2%*
Three questions from the exit questionnaire:		
Knowledge about fraud?	52.4%	53.9%*
Could detect employee fraud?	59.3%	58.6%*
Fraud an important topic?	85.5%	89.3%*

* Significant at $p<.05$

TABLE 6
Descriptive Statistics for Inventories - Student Group
Mean (Standard Deviation)

Inventory Responses:	Management	Accounting
Goal Orientation:		
Learning Goal Orientation	46.6 (6.6)	46.0 (7.0)
Performance Goal Orientation	45.6 (6.7)	44.9 (7.8)
Ethical Orientation:		
Idealism	66.9 (13.7)	64.9 (13.2)
Relativism	54.1 (14.1)	53.6 (12.3)
Personality Traits:		
Conscientiousness	36.0 (6.2)	37.5 (5.8)*
Extraversion	34.1 (7.3)	34.1 (7.6)
Agreeableness	38.9 (6.0)	39.3 (5.7)
Emotional Stability	31.9 (7.6)	30.8 (7.8)
Intellect	36.8 (5.6)	34.5 (5.8)*

* Significant at $p<.05$

TABLE 7
Regression Results for Effects of Knowledge and Training – Student Group

$$Y_i = b_0 + b_1\, RF_i + b_2\, MAJOR_i + b_3\, TRAINING_i + b_4\, ARTICLES_i + b_5\, THEFT_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		29.672	9.070	.000
RF	(+)	5.295	3.873	.000
MAJOR	(+)	15.819	6.709	.000
TRAINING	(+)	2.106	.938	.349
ARTICLES	(+)	2.017	1.720	.086
THEFT	(+)	2.336	.925	.355
F-statistic	13.869 (p = .000)			
Adj. R^2	.110			

Variable definitions:

Y_i = assessment of the possibility of fraud by subject i.

RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i.

$MAJOR_i$ = 1 if the subject is an accounting major, and 0 otherwise.

$TRAINING_i$ = 4 if the subject has more than 10 courses, 3 = 7-10 courses, 2 = 4-6 courses, 1 = 1-3 courses and 0 = none.

$ARTICLES_i$ = 4 if the subject has read more than 6 articles, 3 = 5-6 articles, 2 = 3-4 articles, 1 = 1-2 articles and 0 = none.

$THEFT_i$ = 1 if the subject has had direct experience with employee theft at his or her place of employment, and 0 otherwise.

ε_i = error term for subject

TABLE 8
Regression Results for Effects of Goal Orientation – Student Group

$$Y_i = b_0 + b_1 RF_i + b_2 LGO_i + b_3 PGO_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		55.412	5.230	.000
RF	(+)	5.322	3.732	.000
LGO	(+)	-.355	-1.905	.057
PGO		.067	.390	.697

F-statistic	5.865 (p = .001)
Adj. R^2	.027

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
LGO_i = the subject's learning goal orientation score
PGO_i = the subject's performance goal orientation score
ε_i = error term for subject

TABLE 9
Regression Results for Effects of Ethical Orientation – Student Group

$$Y_i = b_0 + b_1 RF_i + b_2 IEO_i + b_3 REO_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		27.421	3.344	.001
RF	(+)	4.961	3.445	.001
IEO	(+)	.145	1.557	.120
REO		.103	1.096	.274

F-statistic	5.491 (p = .001)
Adj. R^2	.026

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
IEO_i = the subject's idealistic ethical orientation score
REO_i = the subject's relativistic orientation score
ε_i = error term for subject

TABLE 10
Regression Results for Effects of Personality Traits – Student Group

Panel A: Personality Trait of Conscientiousness

$$Y_i = b_0 + b_1 RF_i + b_2 PT(C)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		43.282	5.493	.000
RF	(+)	5.331	3.730	.000
PT(C)	(+)	-.034	-.168	.867
F-statistic	6.962 (p = .001)			
Adj. R^2	.022			

Panel B: Personality Trait of Extraversion

$$Y_i = b_0 + b_1 RF_i + b_2 PT(E)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		41.566	6.709	.000
RF	(+)	5.329	3.728	.000
PT(E)	(+)	.013	.081	.936
F-statistic	6.951 (p = .001)			
Adj. R^2	.022			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(C)_i$ = the subject's score for the personality trait of conscientiousness
$PT(E)_i$ = the subject's score for the personality trait of extraversion
ε_i = error term for subject

TABLE 11
Regression Results for Research Questions – Student Group

$$Y_i = b_0 + b_1 RF_i + b_2 PT(A)_i + b_3 PT(ES)_i + b_4 PT(I)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		46.794	4.541	.000
RF	(+)	5.177	3.605	.000
PT(A)		.115	.511	.610
PT(ES)		-.227	-1.343	.180
PT(I)		-.053	-.235	.814
F-statistic	3.995 (p = .003)			
Adj. R^2	.022			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(A)_i$ = the subject's score for the personality trait of agreeableness
$PT(ES)_i$ = the subject's score for the personality trait of emotional stability
$PT(I)_i$ = the subject's score for the personality trait of intellect
ε_i = error term for subject

TABLE 12
Demographic Information and Descriptive Statistics - Professional Group

	MBAs	Internal Auditors
Knowledge:		
Major	244	248
Mean Age (in years)	32	40*
Had the following number of training courses on fraud:		
None	71.7%	21.8%*
1-3	23.0%	40.3%*
4-6	3.3%	23.4%*
7-10	2.0%	8.5%*
More than 10	.0	6.0%*
Read the following number of articles on fraud:		
None	18.9%	5.3%*
1-2	56.1%	52.2%
3-4	13.9%	25.1%*
5-6	4.9%	6.5%
More than 6	6.1%	10.9%
Experience:		
Full-time work experience (in years)	7.7	15.4*
Experienced Theft at Work	63.5%	78.6%*
Believed Primary Responsibility to Detect Fraud Rests With:		
Management	46.7%	74.0%*
Employees	27.5%	9.3%*
Internal Auditor	25.0%	16.3%*
External Auditor	.8%	.4%
Question that the subjects were ask after reading the experimental materials:		
Theft occurring?	44.5%	58.3%*
Three questions from the exit questionnaire:		
Knowledge about fraud?	46.1%	59.6%*
Could detect employee fraud?	54.9%	57.4%
Fraud an important topic?	86.8%	90.2%*

* Significant at $p < .05$

TABLE 13
Descriptive Statistics for Inventories - Professional Group
Mean (Standard Deviation)

Inventory Responses:	Management	Internal Auditors
Goal Orientation:		
Learning Goal Orientation	48.2 (5.6)	47.5 (5.7)
Performance Goal Orientation	44.2 (6.4)	41.3 (7.1)*
Ethical Orientation:		
Idealism	63.9 (13.4)	59.4 (15.0)*
Relativism	49.7 (15.0)	41.2 (12.7)*
Personality Traits:		
Conscientiousness	37.6 (5.8)	39.0 (5.5)*
Extraversion	34.0 (7.3)	32.7 (6.9)*
Agreeableness	39.7 (5.6)	39.7 (5.1)
Emotional Stability	32.9 (7.2)	35.2 (7.5)*
Intellect	37.1 (5.7)	36.2 (5.7)

* Significant at $p < .05$

TABLE 14
Regression Results for Effects of Knowledge and Training – Professional Group

$$Y_i = b_0 + b_1\, RF_i + b_2\, MAJOR_i + b_3\, TRAINING_i + b_4\, ARTICLES_i + b_5\, WORK_i + + b_6\, THEFT_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		32.344	9.829	.000
RF	(+)	7.194	5.412	.000
MAJOR	(+)	5.271	2.058	.040
TRAINING	(+)	2.972	2.217	.027
ARTICLES	(+)	-1.228	-1.047	.296
FULL	(+)	.261	1.870	.062
THEFT	(+)	3.610	1.344	.180

F-statistic 9.789 (p = .000)
Adj. R^2 .097

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i.
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i.
$MAJOR_i$ = 1 if the subject is an accounting major, and 0 otherwise.
$TRAINING_i$ = 4 if the subject has more than 10 courses, 3 = 7-10 courses, 2 = 4-6 courses, 1 = 1-3 courses and 0 = none.
$ARTICLES_i$ = 4 if the subject has read more than 6 articles, 3 = 5-6 articles, 2 = 3-4 articles, 1 = 1-2 articles and 0 = none.
$FULL_i$ = number of years of full-time work experience
$THEFT_i$ = 1 if the subject has had direct experience with employee theft at his or her place of employment, and 0 otherwise.
ε_i = error term for subject

TABLE 15
Regression Results for Effects of Goal Orientation – Professional Group

$$Y_i = b_0 + b_1 RF_i + b_2 LGO_i + b_3 PGO_3 + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		34.552	2.740	.006
RF	(+)	7.116	5.225	.000
LGO	(+)	.295	1.416	.157
PGO		-.187	-1.097	.273
F-statistic	10.516 (p = .000)			
Adj. R^2	.055			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
LGO_i = the subject's learning goal orientation score
PGO_i = the subject's performance goal orientation score
ε_i = error term for subject

TABLE 16
Regression Results for Effects of Ethical Orientation – Professional Group

$$Y_i = b_0 + b_1\, RF_i + b_2\, IEO_i + b_3\, REO_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		46.971	6.994	.000
RF	(+)	7.156	5.240	.000
IEO	(+)	-.011	-.137	.891
REO		-.125	-1.538	.125

F-statistic	9.674 (p = .000)
Adj. R^2	.051

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
IEO_i = the subject's idealistic ethical orientation score
REO_i = the subject's relativistic orientation score
ε_i = error term for subject

TABLE 17
Regression Results for Effects of Personality Traits – Professional Group

Panel A: Personality Trait of Conscientiousness

$$Y_i = b_0 + b_1 RF_i + b_2 PT(C)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		34.318	4.250	.000
RF	(+)	7.043	5.169	.000
PT(C)	(+)	.170	.820	.412
F-statistic	14.188 (p = .000)			
Adj. R^2	.051			

Panel B: Personality Trait of Extraversion

$$Y_i = b_0 + b_1 RF_i + b_2 PT(E)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		47.236	7.808	.000
RF	(+)	7.087	5.223	.000
PT(E)	(+)	-.195	-1.182	.238
F-statistic	14.570 (p = .000)			
Adj. R^2	.052			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(C)_i$ = the subject's score for the personality trait of conscientiousness
$PT(E)_i$ = the subject's score for the personality trait of extraversion
ε_i = error term for subject

TABLE 18
Regression Results for Research Questions – Professional Group
$Y_i = b_0 + b_1 RF_i + b_2 PT(A)_i + b_3 PT(ES)_i + b_4 PT(I)_i + \varepsilon_i$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		26.530	2.338	.020
RF	(+)	7.094	5.215	.000
PT(A)		.029	.128	.899
PT(ES)		.050	.314	.754
PT(I)		.310	1.460	.145
F-statistic	6.572 (p = .000)			
Adj. R^2	.051			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(A)_i$ = the subject's score for the personality trait of agreeableness
$PT(ES)_i$ = the subject's score for the personality trait of emotional stability
$PT(I)_i$ = the subject's score for the personality trait of intellect
ε_i = error term for subject

TABLE 19
Average Years of Experience – Internal Auditors

	Mean	Standard Deviation
Novice (n = 34)	1.8	.70
Intermediate (n = 43)	6.0	1.36
Expert (n = 171)	20.5	8.52

TABLE 20
Regression Results for Effects of Expertise Progression – Internal Auditors

$$Y_i = b_0 + b_1 RF_i + b_2 EXPGRP_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		31.558	5.330	.000
RF	(+)	10.848	6.421	.000
EXPGRP	(+)	4.034	1.991	.048
F-statistic	22.789 (p = .000)			
Adj. R^2	.150			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i.
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i.
$EXPGRP_i$: 3 if the subject is an expert, 2 = if the subject is an intermediate, 1 = if the subject is a novice
ε_i = error term for subject

TABLE 21
Regression Results for Effects of Knowledge and Training – Internal Auditors

$$Y_i = b_0 + b_1\, RF_i + b_2\, MAJOR_i + b_3\, TRAINING_i + b_4\, ARTICLES_i + b_5\, WORK_i + + b_6\, THEFT_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		28.392	6.274	.000
RF	(+)	10.991	6.612	.000
TRAINING	(+)	.488	.335	.738
ARTICLES	(+)	-.051	-.035	.972
FULL	(+)	.278	1.783	.076
THEFT	(+)	10.734	2.891	.004

F-statistic 12.383 (p = .000)
Adj. R^2 .188

Variable definitions:

Y_i = assessment of the possibility of fraud by subject i.
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i.
$MAJOR_i$ = 1 if the subject is an accounting major, and 0 otherwise.
$TRAINING_i$ = 4 if the subject has more than 10 courses, 3 = 7-10 courses, 2 = 4-6 courses, 1 = 1-3 courses and 0 = none.
$ARTICLES_i$ = 4 if the subject has read more than 6 articles, 3 = 5-6 articles, 2 = 3-4 articles, 1 = 1-2 articles and 0 = none.
$FULL_i$ = number of years of full-time work experience
$THEFT_i$ = 1 if the subject has had direct experience with employee theft at his or her place of employment, and 0 otherwise.
ε_i = error term for subject

TABLE 22
Regression Results for Effects of Goal Orientation – Internal Auditors

$$Y_i = b_0 + b_1 RF_i + b_2 LGO_i + b_3 PGO_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		- 8.475	-.576	.565
RF	(+)	10.507	6.316	.000
LGO	(+)	1.007	3.957	.000
PGO		.074	.366	.714

F-statistic	20.032 (p = .000)
Adj. R^2	.189

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
LGO_i = the subject's learning goal orientation score
PGO_i = the subject's performance goal orientation score
ε_i = error term for subject

TABLE 23
Regression Results for Effects of Ethical Orientation – Internal Auditors

$$Y_i = b_0 + b_1 RF_i + b_2 IEO_i + b_3 REO_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		44.583	5.175	.000
RF	(+)	10.730	6.242	.000
IEO	(+)	.027	.269	.788
REO		-.098	-.824	.411
F-statistic	13.069 (p = .000)			
Adj. R^2	.129			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
IEO_i = the subject's idealistic ethical orientation score
REO_i = the subject's relativistic orientation score
ε_i = error term for subject

TABLE 24
Regression Results for Effects of Personality Traits – Internal Auditors

Panel A: Personality Trait of Conscientiousness

$$Y_i = b_0 + b_1 RF_i + b_2 PT(C)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		29.258	2.740	.007
RF	(+)	10.726	6.296	.000
PT(C)	(+)	.328	1.221	.223
F-statistic	21.345 (p = .000)			
Adj. R^2	.141			

Panel B: Personality Trait of Extraversion

$$Y_i = b_0 + b_1 RF_i + b_2 PT(E)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		36.649	4.769	.000
RF	(+)	10.928	6.422	.000
PT(E)	(+)	.156	.724	.470
F-statistic	20.781 (p = .000)			
Adj. R^2	.138			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(C)_i$ = the subject's score for the personality trait of conscientiousness
$PT(E)_i$ = the subject's score for the personality trait of extraversion
ε_i = error term for subject

TABLE 25
Regression Results for Research Questions – Internal Auditors

$$Y_i = b_0 + b_1 RF_i + b_2 PT(A)_i + b_3 PT(ES)_i + b_4 PT(I)_i + \varepsilon_i$$

Variable	Expected Sign	Coefficient	t-statistic	p-value
Intercept		- 4.192	-.303	.762
RF	(+)	10.217	6.075	.000
PT(A)		.316	1.603	.289
PT(ES)		.038	.196	.845
PT(I)		.915	3.480	.001
F-statistic	15.047 (p = .000)			
Adj. R^2	.185			

Variable definitions:
Y_i = assessment of the possibility of fraud by subject i
RF_i = number of risk factors (0, 1, 2, or 3) in the Scenario that was randomly assigned to subject i
$PT(A)_i$ = the subject's score for the personality trait of agreeableness
$PT(ES)_i$ = the subject's score for the personality trait of emotional stability
$PT(I)_i$ = the subject's score for the personality trait of intellect
ε_i = error term for subject

TABLE 26
Intercorrelations Among Study Variables, Means, and Standard Deviations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. LGO1	1.000														
2. LGO2	0.63**	1.000													
3. LGO3	0.65**	0.54**	1.000												
4. PGO1	-0.12	0.03	-0.07	1.000											
5. PGO2	0.04	0.21**	0.07	0.65**	1.000										
6. PGO3	-0.12	0.07	-0.02	0.59**	0.60**	1.000									
7. AccHr	-0.01	0.04	-0.04	-0.15*	-0.10	-0.08	1.000								
8. Read	0.03	0.001	-0.02	-0.11	-0.12	-0.09	0.09	1.000							
9. Training	-0.07	0.03	-0.07	-0.09	-0.04	-0.01	0.17**	0.28**	1.000						
10. Age	0.10	0.04	0.04	-0.03	0.06	0.09	-0.06	0.34**	0.41**	1.000					
11. Theft	0.19**	0.15*	0.19**	0.11	0.14*	0.08	0.09	0.16*	0.26**	0.30**	1.000				
12. EPQ-Idealism	0.16*	0.12	0.19**	0.14*	0.09	0.23**	-0.10	0.07	-0.04	0.14*	0.04	1.000			
13. EPQ-Relativism	-0.08	-0.10	-0.10	0.15*	0.06	0.003	-0.04	-0.06	-0.13*	-0.20**	-0.05	-0.15*	1.000		
14. Risk Factors	0.10	0.04	0.08	-0.05	0.04	-0.06	0.04	0.02	-0.03	0.02	-0.04	-0.003	0.07	1.000	
15. Performance	0.26**	0.22**	-0.22**	-0.02	0.07	-0.01	-0.02	0.08	0.10	0.18**	0.20**	-0.02	-0.03	0.38**	1.000
Means	17.85	17.56	12.02	9.73	16.60	14.96	3.40	1.66	1.37	39.74	0.79	59.39	41.29	1.52	58.30
SDs	2.66	2.19	1.86	2.43	2.78	2.97	0.93	1.06	1.10	11.64	.41	14.95	12.67	0.87	24.99

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

TABLE 27
Parameter Estimates for SEM Analysis – Internal Auditors

Panel A. Indicator (Measured) Variables

Variable	Mean	Std. Error	Factor Loading	t-value
LGO1	17.85	2.67	23.29	5.60
LGO2	17.56	2.19	0.35	4.35
LGO3	12.02	1.86	2.28	2.65
PGO1	9.73	2.43	0.23	2.91
PGO2	16.60	2.78	0.16	4.50
PGO3	14.96	2.97	0.75	6.01
AccHrs	3.40	.93	-4.42	-1.48
Articles Read	1.66	1.06	1.0	n/a
Training	1.37	1.10	-4.28	-1.62
Age	39.74	11.64	1.60	10.96
Theft	.79	.41	2.30	n/a
Idealism	59.39	14.95	-0.05	-2.18
Relativism	41.29	12.67	.21	n/a
Risk Factors	1.5	.87	set = 1.0	n/a
Performance	58.30	24.99	set = 1.0	n/a

Panel B. Path Coefficients for Latent Variables

Path	Factor Loading	Std. Error	t-value
LGO – Knowledge	-0.01	0.07	-0.18
LGO – Experience	0.33	0.10	3.48*
PGO – Knowledge	0.42	0.10	4.20*
PGO – Experience	-0.05	0.09	-0.57
Knowledge –Ethical Position	0.26	1.08	0.24
Experience – Ethical Position	6.45	0.60	10.70*
Ethical Position – Risk Factors	0.07	0.03	2.39*
Risk Factors – Performance	0.64	0.05	11.73*

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Curriculum Vitae

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Ph.D.	Virginia Commonwealth University Major: Accounting; Minor: Decision Sciences
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1996-1999	Tax Manager, Standard Commercial Corporation Wilson, North Carolina
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- "Vacation Homes and Residential Interest Deductions: Conflicting Interpretations Create Confusion (and Planning Opportunities)," with J. O. Everett and W. A. Duncan, 2004, *Journal of Legal Tax Research* 2: 61-74.

WORK IN PROGRESS:

- "Auditor Effectiveness in the United States and the United Kingdom: Comparison and Analysis," with A. Greenfield and R. Russ. Under 1st review, *International Journal of Auditing*
- "Can Ethical Position Contribute to our Understanding of Fraud Detection?" with C. Norman and B. Wier. Under 1st review, *Journal of Business Ethics*
- "Tax Ramifications of the Tobacco Buy-Out," with D. Schisler. Under 1st review, *Tennessee CPA Journal*

- "Auditor Ethics: An International Cultural Study," with R. Russ and A. Greenfield.
- "Do Companies Trade Tax-Free in their Own Stock: An Alternative Explanation for the Stock Buy-Back Decision," with D. Schisler and D. Schneider.
- "Ethical Measurements in Accounting Research: Why the Ethical Position Questionnaire is Better Suited than the Defining Issues Test," with A. Greenfield and R. Russ.
- "Survival Strategies of Financially Distressed Firms," with R. Russ and J. Schwendeman.
- "The Altman Z-score Revisited," with A. Greenfield and R. Russ.

PROCEEDINGS:

- "Ethical Measurements in Accounting Research: Why the Ethical Position Questionnaire is Better Suited than the Defining Issues Test," with A. Greenfield and R. Russ, *Southeast DSI Meeting*, 2006.
- "The Altman Z-score Revisited," with A. Greenfield and R. Russ, *AAA Annual Meeting (Forum Session)*, 2004.
- "Auditor Effectiveness in the United States and the United Kingdom: Comparison and Analysis," with A. Greenfield and R. Russ, AAA *MidAtlantic Regional Meeting*, 2004.
- "Vacation Homes and Residential Interest Deductions: Conflicting Interpretations Create Confusion (and Planning Opportunities)," with J. Everett and W. Duncan, AAA *Southeast Regional Meeting*, 2003.
- "Transfer Pricing Practices and Regulatory Actions in the United States and United Kingdom: A Cross Country Comparison and Analysis," with R. Tondkar and J. Vanderlaan, AAA *Southeast Regional Meeting*, 2003.

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