AUDITOR MENTAL REPRESENTATIONS AND HYPOTHESIS TESTING OF THE CONTROL ENVIRONMENT

by

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Abstract

In this thesis, I examine how auditors construct their mental representations and test their hypotheses about the strength of a client’s control environment. With regard to the former, I hypothesize that management’s frame of the control system and auditor’s retrieval of control environment information from memory may influence the auditor’s control environment mental representation and impact subsequent audit judgments. Consistent with my theoretical predictions, I find that retrieval of control environment information from memory biases an auditor’s mental representation, and that this biased mental representation impacts subsequent fraud assessment. In addition, there is limited evidence to support the conjecture that auditors may be susceptible to management’s framing of the internal control system resulting in relatively positive control environment evaluations which was found to transfer to some subsequent audit judgments. With regard to the latter, prior audit literature has examined how auditors evaluate person specific characteristics, such as competence, of other auditors, however there has been no research that has examined how auditors test such characteristics of client management. I disentangle whether auditors utilize a diagnostic and/or a conservative hypothesis testing strategy when testing client management’s ethicality and competence as these are fundamental components of the client’s control environment. A diagnostic testing strategy is evidenced by the auditor searching for the most informative information, whereas a conservative testing strategy is evidenced by the auditor searching for risks. I examine how a checklist decision aid contained in the current institutional context may inhibit auditors’ utilization of a diagnostic testing strategy, and examine how a schematic decision aid is able to enhance diagnostic testing. The results indicate that auditors
utilize both diagnostic and conservative testing strategies when testing client management ethicality; however, the auditor’s testing strategy is only diagnostic when testing client management competence. In regard to decision aids, I found that when testing client management ethicality and competence, a schematic decision aid was able to increase the auditor’s extent of diagnostic testing. The checklist decision aid decreased the auditor’s extent of diagnostic testing only when testing client management ethicality, and was not different from unaided judgments when testing client management competence.
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Table of Contents

Abstract .................................................................................................................. ii
Acknowledgements .................................................................................................iv
Table of Contents ....................................................................................................vi
List of Tables ..........................................................................................................ix
List of Figures .........................................................................................................x
Chapter 1 Introduction ............................................................................................1
Chapter 2 Literature Review ...................................................................................8
  2.1 Archival Literature .........................................................................................9
  2.2 Experimental Literature .............................................................................10
Chapter 3 Auditor Mental Representations of the Control Environment ............14
  3.1 Hypotheses Development ..........................................................................15
    3.1.1 Framing Effects ...................................................................................15
    3.1.2 Output Interference ............................................................................19
    3.1.3 Memory Based Judgment ...................................................................22
    3.1.4 Consequences of Mental Representations .........................................23
  3.2 Research Method ..........................................................................................25
    3.2.1 Experimental Setting ...........................................................................25
    3.2.2 Experimental Materials ......................................................................25
    3.2.3 Experimental Procedures ....................................................................27
    3.2.4 Experimental Design ..........................................................................29
      3.2.4.1 Independent Variables .................................................................29
3.2.4.2 Dependent Variables .............................................31

3.2.4.2.1 CE Mental Representation .........................31
3.2.4.2.2 CE Effectiveness Assessment .....................32
3.2.4.2.3 Subsequent Audit Judgments ....................32

3.2.5 Participants ..........................................................33

3.3 Empirical Results .........................................................33

3.3.1 Manipulation Checks .............................................33
3.3.2 Test of H1a and H2a ............................................34
3.3.3 Test of H1b and H2b ............................................36
3.3.4 Supplemental Analysis of H1b .......................37
3.3.5 Test of H4 ..........................................................39
3.3.6 Supplemental Analysis of H4 .......................41

3.4 Summary Discussion ..................................................41

Chapter 4 Auditor Hypothesis Testing of the Control Environment ..45

4.1 Hypotheses Development .........................................47

4.1.1 Client Ethicality and Competence in the Audit Context ..47
4.1.2 Auditor Hypothesis Testing .................................48
4.1.3 Psychological Processes ....................................50
4.1.4 Strategy Acquisition ........................................55
4.1.5 Strategy Activation ...........................................56

4.2 Research Method .......................................................58

4.2.1 Experimental Setting .........................................58
4.2.2 Experimental Procedures ................................59
List of Tables

Table 1: Mental Representation Experimental Conditions and Cell Sizes……………….. 98
Table 2: Mental Representation Test of H1a and H2a…………………………………….. 99
Table 3: Mental Representation Follow-up Test of H1b………………………………… 101
Table 4: Mental Representation Test of H4…………………………………………….. 102
Table 5: Hypothesis Testing Experimental Design ……………………………………. 103
Table 6: Analysis of H5a, H6a, H7a and H8a Test Specification……………………… 105
Table 7: Analysis of H5a and H6a Test Specification Interaction Decomposition…… 107
Table 8: Analysis of H5a, H6a, H7a and H8a Test Selection………………………… 108
Table 9: Analysis of H5b, H6b, H7b and H8b Test Specification……………………… 109
Table 10: Analysis of H5b, H6b, H7b and H8b Test Selection………………………… 111
List of Figures

Figure 1: Honesty Frame Illustrative Example.............................................112
Figure 2: Causes and Consequences of Mental Representations.........................113
Figure 3: Checklist Decision Aids.............................................................114
Figure 4: Schema Decision Aids...............................................................115
Figure 5: Audit Test Menus.................................................................117
Chapter 1

Introduction

Auditors are educated and trained in the skills required to audit financial statements, but they generally lack comparable formal training in the psychological evaluation of the less objective non-financial attributes that compromise the [control environment] (e.g., management’s philosophy, attitude or integrity)

Marden et al. 1997, p.65

In this thesis, I examine how auditors construct their mental representations and test their hypotheses about the strength of a client’s control environment. The control environment (CE) has been identified as providing the foundation for the effective operation of internal controls over financial reporting. It includes such overarching controls as the organization’s “tone at the top” including managerial ethicality and competence, philosophy and operating style, and other entity wide controls. Due to its pervasive nature, auditors must evaluate the CE. However, prior audit research has repeatedly highlighted that auditors are not sensitive to or fail to impound CE information cues. For example, a replicated finding is that auditors may not differentiate between clients of strong versus weak CE characteristics (e.g., Bernardi 1994) leading to deficient CE judgments with respect to understatement of risk. Despite identifying these issues, researchers have not yet examined what cognitive process is responsible for this judgment deficiency. Information processing theories suggests that several cognitive factors are critical to such an assessment including auditors’ mental representation and hypothesis testing. Hence, my research question is how do these factors impact CE judgment quality?

Examining CE judgment quality and the factors that influence it is important because CE judgment deficiencies may compromise audit effectiveness and audit quality on a company wide basis. Research has found that investors are concerned about company-level control
weaknesses, such as the CE, on accrual quality (Doyle et al. 2007a; Hunton et al. 2010) which is the earnings attribute that is most strongly associated with the cost of equity (Francis et al. 2004). Furthermore, credit rating agencies express much more concern about entity wide control issues than account specific issues in revising credit ratings (e.g., Moody’s 2006). The quote from Marden et al. (1997) at the commencement of this chapter highlights how the auditor’s evaluation of a client’s CE is a unique audit task, and emphasizes the difficulty auditor’s encounter when searching for and impounding information from such subjective attributes. Hence, there appears to be a discrepancy between financial statement user emphasis on the CE and auditors’ ability to perform such an evaluation, underscoring the need to examine determinants of CE judgment quality.

To answer the research question, I will conduct two experiments. The first experiment focuses on the auditor mental representation cognitive process by examining two potential determinants of CE evaluation quality: auditor cue memory and management’s control system framing. Little is known about the effects of retrieving CE information cues from memory on auditor judgments, despite output interference theory suggesting that the retrieval process may exacerbate positive evaluations (e.g., Holtgraves and Srull 1990). In regard to framing effects, the CE allows client management to frame their internal control system as one that promotes honesty rather than the traditional deterrence and detection of dishonesty (Cushing and Romney 1990) which would impact auditor mental representation (e.g., Levin et al. 1998) to be overly positive. Memory models (e.g., Wyer and Srull 1986) that incorporate the availability heuristic (e.g., Tversky and Kahneman 1973) would predict that the resulting mental representation would mediate the effect of retrieval process and attribute frame on CE evaluation judgment when the judgment is “memory based” (Hastie and Park
Importantly, given the sequential nature of the audit process and pervasiveness of the CE, such mental representations are predicted to impact subsequent audit judgments such as fraud assessments.

The second experiment focuses on the auditor hypothesis testing cognitive process by examining how auditors test two important CE components, client management ethicality and client management competence. Although there is a stream of audit literature that examines how auditors evaluate characteristics, such as competence, of other external (e.g., Tan and Jamal 2001; Tan and Jamal 2006; Kennedy and Peecher 1997) and internal (e.g., Brown 1983; Schneider 1984; Margheim 1986) auditors, there has been little research that has examined how auditors examine or test such person specific characteristics of client management. This is a critical question as characteristics such as client management ethicality and competence are fundamental components of the client’s CE (ISA 315; COSO 1992).

The study develops predictions based on cue-diagnosticity (e.g., Skowronski and Carlston 1987; Devine et al. 1990) to predict auditors will be more likely to utilize a high diagnostic hypothesis testing strategy (e.g., Trope and Bassok 1982) when testing the person specific characteristics (i.e., traits) of client management. A diagnostic testing strategy is evidenced by the auditor searching for the most informative information, whereas a conservative testing strategy is evidenced by the auditor searching for risks. Importantly, the

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1 Client management ethicality and competence are person specific characteristics of an individual (e.g., CFO). Consistent with the accounting (Bonner 2008, 100) and psychology literature (e.g., Devine et al. 1990), I use the term “trait” to reflect that ethicality and competence are internal person specific characteristics that influence an individual’s thoughts/behaviors consistently (e.g., Pervin 1994, 108). To illustrate, ethicality is a trait dimension of an individual and this dimension can be conceptualized as a continuum (Reeder and Brewer 1979). I use the term “disposition” to identify where an individual belongs along this continuum. For example, an individual may be predisposed to be ethical, or predisposed to be unethical. Note that situational constraints may encourage or restrict the expression of traits. For example, Murphy (1993) notes that traits such as honesty may be more easily expressed in some situational contexts as compared to other contexts. In the audit literature, the fraud triangle (SAS 99) also highlights the importance of both person specific characteristics and situational characteristics.
two traits of interest, client management ethicality and competence, are theoretically structured differently (Reeder and Brewer 1979; Devine et al. 1990) which provides a unique setting in which to examine auditor hypothesis testing strategy.² Specifically, although diagnosticity would provide similar predictions as auditor conservatism (Smith and Kida 1991; Kida 1984) when testing client management ethicality, the diagnosticity prediction differs from auditor conservatism when testing client management competence. Hence, this study examines whether auditor conservatism inhibits an auditor from conducting the most diagnostic audit tests of the CE. Alternatively, auditors may overcome their conservative tendencies to conduct the most diagnostic audit tests of the CE. The impact of two types of decision aids, one currently used in practice (i.e., checklist) and one based on theory (i.e., schema), are investigated.

The results from the first experiment are consistent with predictions based on output interference theory that auditor memory retrieval strategies impact mental representations. Specifically, auditors who recall positive CE information cues prior to negative CE information cues develop a more favorable CE mental representation as compared to auditors who recall negative CE information cues prior to positive CE information cues. This positive bias is caused by a greater proportion of positive CE information items contained in the auditor’s mental representation. Importantly, and consistent with the theoretical predictions, the mental representation significantly impacts subsequent fraud assessment such that auditors who had a positively biased mental representation assessed the likelihood of fraud as less, despite the presence of a fraud in the case.

In regard to management framing of the internal control system, I find evidence that

² As will be discussed later, the two traits are opposite in terms of their hierarchical restrictiveness valence (Reeder and Brewer 1979).
partially supports my prediction that, holding CE information cues constant, when the CE is
framed positively as encouraging honesty, it is evaluated as being more effective as compared
to when it is framed negatively as discouraging dishonesty. Specifically, supplemental
analyses report that senior auditors in the encouraging honesty frame condition evaluated the
CE as significantly more effective when they believed that a control system that has been
designed to create and maintain honesty in the workplace was a stronger internal control
system than one that has been designed to deter and detect dishonesty in the workplace.
Additional supplemental analyses from a sample of junior auditors who have less experience
on which to develop these beliefs (e.g., Pei et al. 1992) provides limited evidence to support
the conjecture that the CE may be evaluated as more effective under an “encouraging honesty”
frame than a “discouraging dishonesty” frame. The potential impact of framing effects on
auditors’ CE effectiveness assessments is important given that my study provides evidence that
some subsequent audit judgments, consistent with audit standards, were impacted by the
auditors’ preliminary assessment of CE effectiveness.

In regard to auditor hypothesis testing, I find that auditors utilize both diagnostic and
conservative testing strategies when testing client management ethicality; however, the
auditor’s testing strategy is only diagnostic when testing client management competence.
Hence, there is evidence to suggest that auditors test the CE in a diagnostic fashion, and this is
an important finding due to the lack of research to date that describes or explains how auditors
conduct tests of client management ethicality and competence despite the importance of such
attributes to financial statement users, and on the audit program. In regard to decision aids, I
found that when testing client management ethicality and competence, a schematic decision aid
was able to increase the auditor’s extent of diagnostic testing. The checklist decision aid
decreased the auditor’s extent of diagnostic testing when testing client management ethicality, and was not different from unaided judgments when testing client management competence.

The remainder of the dissertation is organized as follows. In Chapter 2, I define and outline the current elements of the CE. I then review archival literature that has examined the impact of the CE on a variety of factors including financial statement error, fraud and accrual quality. I then review the experimental literature to date that has examined how auditors evaluate the CE.

In Chapter 3, I focus on the auditors’ mental representation cognitive process. Based on theories in cognitive psychology, I hypothesize how retrieval of CE information from auditor memory and how management differential framing of their control system may influence the auditors’ mental representation. I then hypothesize how this mental representation may transfer to subsequent audit judgments. The following section then outlines the experimental method used to investigate my mental representation hypotheses followed by the empirical results. The chapter concludes with a summary discussion of my auditor mental representation findings including limitations and future research opportunities.

In Chapter 4, I focus on the auditor hypothesis testing cognitive process. I juxtapose the generic psychology literature to the auditor hypothesis testing literature in order to illustrate accounting institutional context differences. Based on this review, I develop hypotheses utilizing theories in social psychology to examine how auditors conduct their tests of two aspects of the CE, client management’s ethicality and competence, and the impact of different decision aids on those assessments. The following section then outlines the experimental method followed by exposition of the empirical results. The chapter concludes with a summary discussion of my auditor hypothesis testing findings including limitations and future
research opportunities.

Chapter 5 summarizes the two experiments, and provides concluding remarks.
Chapter 2

Literature Review

This chapter begins by outlining the current definition and elements of the CE as it relates to the audit institutional context. The following section reviews archival literature that has documented associations between CE operationalizations and various factors such as financial statement fraud. The final section reviews experimental literature which ultimately suggests difficulties and deficiencies in the auditor judgment and decision making process as it relates to the CE assessment task.

Broadly, COSO (1992) defines the CE as the organizations’ people and the environment in which they work, and contends that it provides the foundation for all other internal control components such as control activities. The CE can be decomposed into seven different elements including: (1) ethicality and integrity, (2) competence, (3) corporate governance mechanisms such as the board of directors and audit committee, (4) management philosophy and operating style, (5) organizational structure, (6) assignment of authority and responsibility, and (7) human resource policies and procedures. Control frameworks including COSO (1992), COSO (2004), CoCo (1995) and Turnbull (2005) consistently reiterate the importance of an entity’s internal CE. In addition, audit standards have also underscored the importance of the CE by stating, “because of the pervasive effect of the control environment on assessing the risks of material misstatement, the auditor’s preliminary judgment about its effectiveness often influences the nature, timing, and extent of the further audit procedures to be performed” (SAS 109.75, see also ISA 315.74).
2.1 Archival Literature: CE Associations With Error, Fraud, and Accrual Quality

Archival research has documented a link between CE features and financial statement errors. For example, Hylas and Ashton (1982) examined the audits of 152 companies containing 281 errors requiring financial statement adjustment. They found that CE issues including client personnel problems, such as competence and insufficient accounting knowledge, were the primary causes of financial statement error, accounting for 35.9% of all errors. Kreutzfeldt and Wallace (1990) found significant associations between CE features and financial statement errors in 260 actual audit engagements. In addition to errors, research has also documented a link between CE features and fraud. For example, Bell and Carcello (2000) found that weak internal CE’s and the interaction between weak CE’s and management attitudes toward aggressive financial reporting were significant risk factors in a logistic regression model used to estimate the likelihood of financial reporting fraud in a sample of 77 fraud engagements and 305 non-fraud engagements. Weak CE’s, as measured by the client auditors, were found in 65% (50 companies) of the fraud cases, as compared to 15% (47 companies) of the non-fraud cases.

More recent research has benefited from the increased internal control public disclosures necessary for compliance with Sarbanes-Oxley Act Section 404. For example, Ashbaugh-Skaife et al. (2008) found that firms that had internal control

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3 Wallace and Kreutzfeldt (1991), utilizing the Kreutzfeldt and Wallace (1990) data set, extend the analysis and document an association between internal audit qualitative attributes and the overall quality of the CE. That is, companies with stronger internal audit functions tended to have stronger overall CE’s.

4 Archival evidence also suggests that auditors may respond when they are able to identify weak CE firms. For example, Blokdijk et al. (2003) found, based on a survey completed by 108 public accounting firms in The Netherlands, planning materiality increased with the auditor’s evaluation of the CE quality (on a 1 to 7 scale). That is, planning materiality is set higher when the auditor assesses the quality of the CE as high. Conversely, when the CE is weak, planning materiality is set lower resulting, presumably, in more auditor effort.
deficiencies had lower quality accruals and larger abnormal accruals, and that remediation was able to increase accrual quality. Specific to the CE, Doyle et al. (2007a) found that the relationship between firms disclosing internal control weaknesses and low accrual quality was driven by the firms that disclosed company-level control weaknesses, such as the CE, rather than firms that disclosed account specific weaknesses. This is a significant finding given that prior research has found that accrual quality is the earnings attribute that is most strongly associated with the cost of equity (Francis et al. 2004). Furthermore, Hunton et al. (2010) found that mid-level managers’ perceptions of their specific public company’s upper-management’s “tone at the top” was found to be positively associated with earnings quality.

2.2 Experimental Literature: Issues with Auditor Evaluation of the CE

Despite archival research illustrating the importance of the CE in financial statement error, fraud, and accrual quality, experimental research has provided differing results with regard to auditors’ performance in CE evaluation, with some studies suggested that auditors may not be sensitive to or may fail to impound CE information. In general, numerous studies to date suggest that auditors struggle with qualitative characteristics of organizational information (e.g., Ponemon and Schick 1991; Braun 2000), and internal control frameworks have identified the CE components as being subjective and therefore require professional judgment in their assessment (COSO 1992, p.31). Prior accounting (Wilks and Zimbleman 2004) and psychology research (e.g.,

5 Ge and McVay (2005), Doyle et al. (2007b), and Ashbaugh-Skaife et al. (2007) further this line of research by providing descriptive information on internal control deficient firms.

6 Related research has also found mixed results as to whether and which CE factors impact managerial judgment and decision making such as financial misreporting. For example, see Brief et al. (1996), D’Aquila (1998), and Booth and Schulz (2004).
Jones & Harris 1967) tends to corroborate COSO’s contention that CE components, for example attitudes of client management, may be extremely difficult to assess.

Specific to the CE, Kaplan and Reckers (1984) found that auditors did not differ in their likelihood of material error judgment between two extreme operationalizations of high and low managerial integrity. Furthermore, control consciousness, or “…the organization’s commitment to establishing an environment that encourages effective internal control” (p.4), had a significant effect on the auditors’ judgment of likelihood of material error, but only for the audit seniors and not the audit managers. Bernardi (1994) partially replicated these findings, and by using different experimental materials and operationalizations, found that client integrity and competence information did not aid auditors in detecting fraud. In addition, Cohen and Hanno (2000) examined how corporate governance attributes and management control philosophy impact subsequent audit judgments by utilizing dichotomous CE manipulations (i.e., strong versus weak). As evidenced by the manipulation checks, auditors were sensitive to the CE manipulations. However, support for their hypotheses was mixed as the CE attributes impacted preplanning judgments, such as client acceptance recommendations, and only some planning judgments, such as control risk assessments.

The experimental studies discussed so far have utilized dichotomous operationalizations of the CE. In contrast, Agoglia et al. (2003b) developed a comprehensive CE case which was based on an actual company that experienced asset misappropriation. In the study, Agoglia et al. (2003b) provides evidence that the task of creating different formats of justification memos may impact auditor fraud risk assessments holding the CE features constant. Auditors required to decompose their
justification memo into the seven CE components, providing both positive and negative evidence for each component, and then reaching an overall conclusion documented both the greatest amount of information in their memo and the greatest proportion of positive CE features in the justification memo, leading them to assess the likelihood of fraud being less as compared to other justification memo formats, despite the presence of an actual fraud. The authors conclude that, “given that there were more positive than negative items in the underlying evidence set, these larger memos tended to include a greater proportion of positive evidence...[which] appears to result in a more positive assessment of the control environment’s ability to prevent fraud” (Agoglia et al. 2003b, p.44).7

Utilizing a different methodology, Chow et al. (1987) surveyed practicing auditors to understand their perceptions of task difficulty and task importance in the required steps of a traditional financial statement audit. With respect to the CE, the study obtained auditor perception information regarding three aspects of auditor evaluation of the integrity and credibility of top management: (1) “determine what information to gather” (p.127), (2) process of obtaining the aforementioned information, and (3) the process of interpreting the aforementioned information. Relative to the other 57 audit tasks, the results suggest that auditors perceived the three management integrity and credibility tasks as difficult.8

In conclusion, the experimental literature to date appears to suggest that there may be significant difficulties with and deficiencies in auditor judgment quality in the CE

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7 This conclusion appears to assume that CE information cues are readily available, measured precisely, and weighted equally when combined into a global judgment.
8 See also Haskins (1987).
evaluation task. Given the associations documented in the archival literature, improving auditor CE judgment quality is critical to overall financial reporting and audit quality.
Chapter 3

Auditor Mental Representations of the Control Environment

This chapter focuses on the auditor’s mental representation cognitive process and develops hypotheses based on theories in cognitive psychology. The chapter begins with a discussion on the importance of mental representations, and memory in general, in the audit context. I then develop hypotheses based on theories in cognitive psychology that explicate the effects of management frames and auditor memory retrieval on auditor CE mental representation. After outlining the experimental method, I then provide details of the empirical results followed by a summary discussion of the study.

An auditor’s ability to identify relevant CE information cues in critical in order to develop a robust mental representation. Moreover, identifying CE information cues is different from other audit tasks as there is typically a large number of positive, or favorable, information cues even in firms engaged in fraud (Agoglia et al. 2003b, 42). Although prior CE evaluation research has presumed that all relevant and diagnostic CE information cues, whether favorable or unfavorable, are available and able to be incorporated into the auditor judgment and decision making process, theories in cognitive psychology suggest that management’s frame of the internal control system and the auditors’ retrieval of information from memory may interfere with CE information cue identification which may exacerbate overly positive risk evaluations.9 As noted by Tan (1995), memory is a critical input in the judgment and decision making process because auditors rely on their memory during an audit engagement (e.g., Moeckel and Plumlee 1989). An auditor’s mental representation of the CE is particularly important because,

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9 Note that the psychology and organizational behaviour literature refers to unfavourable or negative information cues as “discrepent” cues (e.g., Cowan 1986; Cowan 1990).
given that audit standards have noted that there may be a lack of documentary evidence available for elements of the CE (PCAOB 2007, 183-184), an auditor may need to access memory to both document test results and evaluate the CE. Given the pervasiveness of the CE, memory of the CE would impact subsequent judgments.

3.1 Hypothesis Development

3.1.1 Framing Effects

A recent report (PricewaterhouseCoopers 2007) surveying global economic crime concluded that, “[a] company that is more likely to be victimised by fraud not only lacks sufficient controls to detect fraudulent activity but also lacks ethics, values, programmes and systems that discourage fraud, i.e., a well-developed culture, including systems that encourage and protect employees who expose fraud” (p.18). Contained within this conclusion are two distinct aspects of internal control – discouraging dishonesty and encouraging honesty. Although internal controls have traditionally been viewed as mechanisms to deter and detect error and/or fraud (Cushing and Romney 1990), only recently has the encouragement of honesty become a critical element of internal control. For example, SAS 99 explicitly notes the, “organization’s responsibility to create a culture of honesty and high ethics” (p.62), including setting the “tone at the top”. 10 From an auditors’ perspective, ISA 315 further notes how the auditor must assess how management has established and upheld their culture of honesty (e.g., CICA HB 5141.068) and PCAOB Auditing Standard No. 5 explicitly notes that the auditor must evaluate the CE. Hence, it is important to examine how this new “honesty” dynamic of

10 Hooks et al. (1994) suggest that the CE may constitute an operationalization of the firms’ culture (p.88).
internal control impacts auditor CE evaluations (see also Hoskin et al. 2008, 386 for an ethical concern).

Framing effects are critical to the auditing context. Prior research in auditing has emphasized that management may be able to deceive auditors by utilizing frames (Johnson et al. 1991; Johnson et al. 1993; Jamal et al. 1995), and as such, an auditor’s ability to detect client management’s framing attempts may lead to improved audit effectiveness. Given the recent renewed emphasis on internal controls over financial reporting (e.g., Shapiro and Matson 2008), management may be inclined to present a favourable honesty based internal control frame to auditors. However, this emphasis to encourage honesty is a relatively new phenomenon compared to the traditional role of internal controls which were designed to deter and detect errors and/or fraud (Cushing and Romney 1990), that is discourage dishonesty. Hence, client management may design and/or frame their internal control system differently as either encouraging honesty or discouraging dishonesty.\footnote{In addition, but beyond this study’s scope, client management’s internal control system frame may not be consistent with their deeds (i.e., management’s frame presented to the auditors is meant to deceive). There may be a difference between management’s words and management’s actions as, “[o]fficial policies specify what management wants to happen. Corporate culture determines what actually happens, and which rules are obeyed, bent or ignored” (COSO 1992, p.24).} For an illustrative example of the honesty frame utilized by a public company, refer to Figure 1.

The effects of decision frames on judgment and choice was introduced by Tversky and Kahneman (1981). Recently, Levin et al. (1998) developed a taxonomy of framing effects in order to disentangle the framing manipulation differences that have emerged since Tversky and Kahneman’s (1981) original work. Of interest to this study is the category of attribute framing, also known as outcome salience (Kuhberger 1998), “in which some characteristic of an object or event serves as the focus of the framing
manipulation” (Levin et al. 1998, 150), and the decision maker subsequently evaluates the object or event. Thus, an attribute framing effect is measured by comparing the evaluations made under the different frames.\(^{12}\) Regardless of the context, consistent results have been found in attribute framing studies: framing attributes in a positive fashion results in more favorable evaluations as compared to when the attributes are framed negatively (e.g., Levin and Gaeth 1988).

Although prior research has noted the persistent impact of attribute framing on evaluative judgments, only recently has the literature began to examine how these judgments are impacted. In their review of the attribute framing literature, Levin et al. (1998) suggest that attribute framing effects occur due to associative memory and attention directing mechanisms. Specifically, “[a]ttribute framing is likely to influence the encoding and representation of information in associative memory, and this representational difference is viewed as the cause of valence-consistent shifts in responses” (Levin et al. 1998, 164, emphasis in original). Studies in psychology have provided corroborating evidence that attribute framing impacts problem space perceptions (Dunegan 1993). Ultimately, the associative model would predict that,

\[\ldots\text{material that is associatively linked to the framing manipulation is more likely to be used in various constructive cognitive tasks, leading to framing congruency in attention, learning, memory, associations, and eventually to positivity and negativity biases in evaluations and judgments} \ (Kuvaas and Selart 2004, 199).\]

Within the accounting context, Bonner (2008, 180) notes that attribute framing may impact how a person develops a problem representation and information search. Partially consistent with this conjecture, Kida (1984) found that auditors listed more positive

\(^{12}\) The two other types of framing include risky choice framing which is interested in risk preferences when risk options are framed differently and goal framing which is interested in persuasive effectiveness when the consequence of the behaviour is framed differently.
information items to support their going concern judgment when the company description
was preceded by a “viable” attribute frame as compared to a “bankruptcy” attribute
frame, thus leading Kida (1984) to conclude that the frame impacted information search
and utilization.

Attribute framing effects would predict that the frame chosen by client
management would impact auditor judgments. That is, when the internal control system
is framed positively or favorably, attribute framing would predict that auditors would
develop an overly positive mental representation as compared to when the internal
control system is framed negatively or unfavorably. Specifically, the associative model
underlying attribute framing effects would predict that when the control system is framed
positively (i.e., encourage honesty), auditors would focus and encode more positive
features of the control system as compared to when the control system is framed
negatively (i.e., discourage dishonesty). Thus, attribute framing effects would predict
that control systems framed as encouraging honesty would lead to relatively positive CE
mental representations and evaluations as compared to when the internal control system
is framed as discouraging dishonesty.\(^\text{13}\) Stated formally:

\textbf{H1a:} Positively framed internal control systems will result in auditors’
mental representations to be relatively positive as compared to
negatively framed internal control systems.

Furthermore, consistent with the theoretical discussion above, I predict that
auditors will evaluate the CE to be more effective when the internal control system is

\(^\text{13}\) Emby (1994) provides some support for this conjecture; however he examined a very different type of
framing known as a question frame (Levin et al. 1998, 166) whereby participants are explicitly directed to
consider the frame manipulation in their instructions.
framed as encouraging honesty as compared to when the control system is framed as
discouraging dishonesty. Stated formally:

**H1b:** Positively framed internal control systems will result in auditors’
control environment evaluations to be relatively positive as compared
to negatively framed internal control systems.

### 3.1.2 Output Interference

Given that the CE typically contains more positive information cues than negative
(Agoglia et al. 2003b), what are the effects when an auditor recalls the relatively more
abundant positive information cues prior to the negative information cues, or vice versa?
Output interference can be defined as simply, “the act of recalling some items inhibits
recall of others” (Frederick 1991, 245). In essence, providing individuals with a sub-set
of items prior to or during recall interferes with their ability to recall the remaining items
from the set. In an early review, Nickerson (1984) illustrates that the phenomenon occurs
both in abstract settings when individuals recall specific items from a listing, and in
richer settings when individuals recall items from a well established category. A widely
cited example of the latter was conducted by Brown (1968) who found that participants
who were provided with a list of American states performed worse at recalling the
remaining states not provided on the list as compared to a participants who were not
provided such a list. That is, the list of items interfered with the participants’ ability to
recall non-cued items from memory.

Specific to internal controls, Frederick (1991) conducted an experiment that was
designed to examine auditor memory structure of internal controls. The experiment

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14 Note that this prediction is also generally consistent with halo theory (e.g., O’Donnell and Schultz 2005).
utilized control activities cues (i.e., not CE cues) that were presented in two different formats: taxonomic and schematic. The fundamental difference between the two is that schematic organizations have temporal affiliations between control procedures.\footnote{As illustrated in Frederick (1991) appendix, an example of a schematic organization would be, when goods are received by transaction flow they are physically verified, there exists pre-numbered receiving reports used and controlled, receiving reports are checked for description and quantities by the department goods are routed to, etc. In contrast, a taxonomic structure would be organized by control objective. For example, authorization of purchase requisitions, authorization of purchase orders, etc.}

Frederick (1991) argued that the temporal associations within the schematic structure provide auditors with either a greater quantity or quality of retrieval cues as compared to taxonomic structures. Frederick (1991) found that output interference occurred consistently in the taxonomic structure and was mixed in the schematic structure presumably due to the temporal associations aiding recall.

A slightly different approach to investigate output interference has been to utilize ordered recall strategies, defined as when, “…a person searches for all of the information pertaining to one category before beginning the search for information pertaining to a second category” (Holtgraves and Srull 1990, 64), with the prediction that items recalled later will be subject to a greater degree of output interference, and hence, inferior recall. Output interference as it relates to ordered recall has been previously investigated in the accounting (e.g., Moser 1989) and auditing (e.g., Anderson et al. 1992) context. For example, Moser (1989) examined investor judgment by manipulating how investors structured their reasoning process as to why a company may not have an increase in earnings. That is, the experiment required investors to list reasons as to why a company may not achieve a 5% increase in earnings by manipulating whether the investors listed reasons in a pro then con order versus con then pro order prior to eliciting a likelihood judgment. Results found strong support for output interference, that is, there was a
significant difference in both the net reasons listed and proportion of reasons.\textsuperscript{16}

Examining auditor CE information retrieval strategies is important due to the relative abundance of positive information cues contained in the CE. Hence, retrieval of this information is predicted to impact auditor mental representations. Stated formally:

\textbf{H2a: Recalling positive features of the control environment prior to recalling negative features will result in auditors’ mental representations to be relatively positive as compared to recalling negative features prior to recalling positive features.}

The availability heuristic, discussed further below, would predict that the retrieval strategy does impact subsequent judgment based on the differential ease in recalling the first set of cues as compared to the second set of cues.\textsuperscript{17} Holtgraves and Srull (1990) found evidence to suggest that an ordered recall strategy does impact subsequent judgments. They found that when instructed to form an overall impression, participants’ evaluations were impacted by recall order, such that the evaluations “tended to parallel the total amount of information recalled” (p.71). Moser (1989) also found that order of retrieval impacted judgment where investors who listed pro then con reasons assessed a greater likelihood of a company to achieve an increase in earnings as compared to investors who listed con then pro reasons. As such, I predict that auditors will evaluate the CE as being more effective when they recall all positive features of the CE before

\textsuperscript{16} Moser (1992) extends Moser (1989) by suggesting that self-generated arguments are a better memory measure than recall which may provide insights as to why the link between memory and judgment has been historically elusive (e.g., Shedler and Manis 1986). My experiment utilizes traditional recall because accurate recall of CE information cues is necessary in the conduct of the audit such as documenting evidence in working papers.

\textsuperscript{17} Hence, judgment is impacted is due to the mental representation as discussed below.
recalling negative features as compared to when they recall all negative features of the CE before recalling positive features. Stated formally:

**H2b:** Recalling positive features of the control environment prior to recalling negative features will result in auditors’ control environment evaluations to be relatively positive as compared to recalling negative features prior to recalling positive features.

### 3.1.3 Memory Based Judgment

The availability heuristic was originally developed by Tversky and Kahneman (1973) and their initial study provided support that people make a judgment based on, “the ease with which instances or associations could be brought to mind” (Tversky and Kahneman 1973, p.208). For example, in study eight, Tversky and Kahneman (1973) provided participants with a list of names that contained famous names and less famous names with the assumption that famous names are easier to recall (i.e., more accessible in memory). The results provided evidence that participants not only recalled more easily accessible information items (i.e., famous names), but also erroneously evaluated the easily accessible information items as having a greater frequency as compared to the relatively difficult to access information items (i.e., less famous names). Subsequent memory models have incorporated the availability heuristic. For example, in developing a broad memory-based model of social cognition, Wyer and Srull’s (1986) conceptual framework predicted that, “judgments will be more highly correlated with the first information recalled (i.e., the information most accessible) than the last information recalled” (p.349).
However, the relationship between memory and judgment is more elusive than the theory suggests. From an information processing perspective, Hastie and Park (1986) contend that for memory to impact judgment, such judgments must be “memory based” whereby information retrieved from long-term memory serves as the primary input to the judgment and decision making process. Under these memory based conditions, the relationship between memory and judgment should be consistent with the availability based predictions. This is in contrast to “on-line” judgment tasks whereby the judgment is developed as the decision maker perceives external information, and as such relationship between memory and judgment is less predictable.\textsuperscript{18} Given the above discussion, I predict that the relationship between internal control system frame and retrieval strategy on auditor evaluation of the CE will be mediated by the mental representation. Stated formally:

\textbf{H3:} \textit{Mental representation will mediate the relationship between internal control frame and recall strategy on auditors’ control environment evaluation.}

3.1.4 Consequences of Mental Representations

Given the pervasiveness of the CE on the risk of material misstatement (SAS 109.75, see also ISA 315.74), an auditor’s mental representation may transfer to subsequent audit tasks. Specifically, the auditor is required to consider the controls in relation to the risk of material misstatement arising from fraud (SAS 99.44). Hence, any bias contained in the auditor’s mental representation of the controls would transfer and

\textsuperscript{18} As noted earlier, others have claimed that the failure to find a relationship between memory and judgment is due to other reasons, for example the use of recall as a measure of memory (Moser 1992).
impact such fraud assessments. Specifically, if the auditors’ CE mental representation is overly positive, then subsequent fraud assessments are also predicted to be biased – that is, the auditor would assess that the CE would be relatively more likely to prevent a misstatement arising from fraud.

In addition to fraud assessments, subsequent to evaluating the CE, the auditor performs preliminary analytical procedures (Knechel et al. 2007). Koonce (1993) notes that development of a mental representation is the critical first step in the analytical procedures process. As noted by prior research (e.g., Hirst and Koonce 1996), typically if an auditor identified an unusual discrepancy between the audit team’s expectations and the unaudited values, the auditor would obtain (or “inherit”) an explanation from management. Hence, one may question how the auditor’s mental representation impacts the auditor’s plausibility assessment of the inherited explanation for the unusual fluctuation. This is an important question as Hirst and Koonce (1996) note that at the planning stage, auditors typically do not corroborate management’s explanations for unexpected differences noted in analytical procedures. Based on the model developed by Koonce (1993), and consistent with the fraud assessment prediction above, I predict that auditors who developed a positive CE mental representation will evaluate management’s explanation as more plausible as compared to auditors who developed a relatively negative CE mental representation. Stated formally:

**H4:** Auditors’ mental representation impacts subsequent audit judgments (likelihood of management’s explanation and fraud likelihood).

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19 Such mental representations, as it relates to analytical procedures, would incorporate both financial (e.g., financial ratios) and client specific non-financial information (e.g., CE) and other non-financial information (e.g., industry trends). See Koonce (1993) and Hirst and Koonce (1996) for further details.
In summary, the above theoretical model explicated in the above hypotheses is illustrated in Figure 2 Panel A.

3.2 Research Method

3.2.1 The Experimental Setting

The experimental case used in this study was adapted (with permission) from Agoglia (1999) which was subsequently published (Agoglia et al. 2003a). I adapted the case including the company background and CE information to capture the elements that were of interest to the study, including the case manipulations and developments since the case was written. A common feature between Agoglia et al.’s (2003b) study and mine is the choice to not manipulate the CE, but rather keep the CE features constant which differs from the prior CE experimental research.20

3.2.2 Experimental Materials

To coincide with the 83 CE “points to consider” that are outlined in COSO (1992), Agoglia (1999) developed information items based on a case study of an actual company that experienced fraud. To adapt the case, I decomposed Agoglia’s (1999) 83 “points to consider” into individual CE information items which yielded 115 items. By examining each individual information item, I determined whether each item reflected a positive or negative feature of the CE. This analysis yielded 88 positive items, 22 negative items, and 5 items that were classified as being unclear. By eliminating the unclear items, Agoglia (1999) had an approximate 1:4 ratio of negative items to positive

20 Note that Agoglia et al. (2003b) focuses on the social aspect of accountability and justification in comparison to my study that focuses on the mental representation cognitive process.
items. In order to remain consistent with Agoglia (1999), I held the ratio of 1:4 constant and selected a total of 50 information cues from the 110 as information cues in the case. The selection of 50 information items is consistent with prior accounting recall experiments (e.g., Weber 1980) while yielding a sufficient number of negative information cues. Finally, effort was made to ensure the 50 information items selected provided participants with a consistent depiction of the company’s CE as compared to Agoglia (1999) as discussed in the pretest results below.

In order to examine the effects of memory on judgment, the experimental materials contain a distractor task which was adapted from prior research (Gibbins 1977; reproduced in Ashton 1984) and was neutral with respect to the experimental manipulations and dependent measures.\(^{21}\) I also incorporate preliminary analytical procedures into the experimental instruments which were adapted from Libby (1985) which has been used extensively in the analytical procedures literature (e.g., Heiman 1990). I ensured that the information contained in the financial ratios was consistent with prior information contained in the case, and I modified the amount of information presented to the participants in order to reduce the possibility of participant fatigue.\(^{22}\) Finally, the non-error explanation provided by management was selected from an inventory of explanations outlined in Kaplan et al. (1992).\(^{23}\)

The case and experimental instrument were pretested in three stages. First, 40 students enrolled in a post-undergraduate advanced accounting program participated in

\[^{21}\text{From a practical perspective, it could be argued that distractor tasks are a natural component of the audit context. For example, there would typically be a lag between obtaining inquiry evidence and documenting such evidence in the audit working papers.}\]

\[^{22}\text{The modification remains consistent with the amount of information provided by other analytical procedure research (e.g., Bedard and Biggs 1991)}\]

\[^{23}\text{Heiman (1990) provides evidence that more frequent hypotheses do not impact plausibility assessment revision differently than low-frequency hypotheses.}\]
the study to ensure the case manipulations were operating as intended, time constraints were appropriate, and the case was understandable. Second, two professional accountants read both my adapted case and the original contained in Agoglia (1999) to ensure that my adapted condensed version provided a consistent depiction of the underlying CE as compared to the original. Based on feedback, minor changes were made to ensure that between positive and negative information cues, the proportion of active versus passive voice was not different (Chi-square=2.03, Fisher’s Exact two-tailed p>0.30), the number of words was not different (F=2.55, two-tailed p>0.10), the number of negative words such as “no”, “not”, or “non” was not different (F=0.87, two-tailed p>0.30), and the use of commas was not different (F=0.07, two-tailed p>0.70). A final pretest was then conducted whereby 65 participants from a graduate accounting program participated in the study to ensure that the material remained understandable, the time constraints were appropriate, and the case manipulations were operating as intended.

3.2.3 Experimental Procedures

On average, the experiment took approximately 45 minutes to complete. Time limits were included in the materials to ensure that all participants spent equal time on each section of the experimental instruments, and all participants were aware that the time limits existed. These time limits were extensively pretested, and provided adequate time to complete the materials.24 Participants were informed that they were to participate in the preliminary planning stages of the audit which would require them to develop an understanding of the client’s CE and subsequent audit planning.

24 Note that utilizing time limits for recall tasks is common in the literature (e.g., Moser 1989).
The experimental materials required participants to read a common set of background information of a client company that was undergoing an integrated audit. The participants were then provided with a written narrative of the controller’s comments on the company’s internal control system. This narrative served as the first experimental manipulation containing the internal control system frame which is discussed further below. Importantly, the controller then listed the 50 unchanging CE information items. After this stage, which was timed to last 15 minutes, participants were not allowed to reexamine the CE or company background information. A 3 minute representative heuristic distractor task was then elicited which was designed to prevent rehearsal of the information cues, thus reducing primacy and recency.

Subsequent to the distractor task, auditors recalled the specific CE information items from the controller’s list using a specific ordered retrieval strategy, which served as the second experimental manipulation which is discussed further below. After each set of recalls, which lasted 5 minutes per set, participants were not allowed to reexamine their recalls or add to their recall lists. After completing the information cue recall task, participants made a preliminary assessment of the effectiveness of the CE. After the CE evaluation, and on a subsequent page, participants were presented with a non-error explanation provided by management to explain differences noted between the audit team’s expected year-end ratios and the current year’s unaudited ratios. Participants are asked to assess the plausibility of the non-error explanation to account for the differences noted in the ratios. Participants then completed manipulation checks, fraud risk assessments, and general concluding questions.
3.2.4 Experimental Design

The experiment is a 2 X 2 between subject factorial design which manipulates internal control system frame (encouraging honesty vs. discouraging dishonesty) and retrieval strategy (recall positive before negative vs. recall negative before positive). The first outcome variable is the auditor’s mental representation of the CE. The second outcome variable is the auditor’s evaluation of the effectiveness of the CE. The third and fourth outcome variable is the auditor’s assessment of the likelihood that the client’s CE would prevent a misstatement arising from fraudulent financial reporting and the auditor’s assessment of the likelihood that the client’s CE would prevent a misstatement arising from the misappropriation of assets respectively. Finally, the fifth outcome variable is the auditor’s plausibility assessment of management’s explanation for differences noted in preliminary analytical procedures.

3.2.4.1 Independent Variables

The manipulation of internal control system frame preceded the specific CE information items, and was woven into the experimental case. The manipulation was structured in the form of a narrative, specifically the controller’s comments to the auditor, and was developed based on the guidance provided in SAS 99 on how management can create a culture of honesty in the workplace.25 The encouraging honesty was as follows (note that the manipulations were not emphasized in the experimental instruments):

Ultimately, the internal control system has been designed with the objective of creating and maintaining honesty in the workplace. Our philosophy is that the effectiveness of controls cannot rise above the integrity and ethical values of the

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25 SAS 99 Exhibit 1 outlines that management can create culture of honesty in the workplace by: (i) setting the tone at the top, (ii) creating a positive workplace environment, (iii) hiring and promoting appropriate employees, (iv) training, (v) confirmation, and (vi) discipline (p.62-68).
people who create, administer, and monitor them. By hiring and promoting people who are honest, and structuring training to encourage employees to continue to be honest, we have established a corporate culture based on a strong set of core values which are clearly communicated and demonstrated by management. Our rationale is that by designing our internal control systems to create and maintain honesty, we are striving to establish a positive work environment and high quality financial reporting.

The discouraging dishonesty version is as follows:

Ultimately, the internal control system has been designed with the objective of deterring and detecting dishonesty in the workplace. Our philosophy is that the effectiveness of controls cannot rise above the integrity and ethical values of the people who create, administer, and monitor them. By firing and disciplining people who are dishonest, and structuring training to discourage employees from being dishonest, we have established a corporate culture based on a strong set of core values which are clearly communicated and demonstrated by management. Our rationale is that by designing our internal control systems to deter and detect dishonesty, we are striving to establish a positive work environment and high quality financial reporting.

The manipulation of retrieval strategy was subsequent to the distractor task and prior to any judgments. The participants follow an ordered retrieval strategy such that positive and negative CE information items were recalled separately. That is, the manipulation has two steps whereby the participant recalls one category of information items, and then recalls the second category. The first step of the recall positive before negative version is as follows (note that the manipulations were not emphasized in the experimental instruments):

In the space provided below, please recall as many strengths of McCrae’s control environment as possible. In other words, recall as many favourable information items of McCrae’s control environment that would decrease the risk of material misstatement.

The second set of recalls in this condition is as follows:

In the space provided below, please recall as many weaknesses of McCrae’s control environment as possible. In other words, recall as many unfavourable information items of McCrae’s control environment that would increase the risk of material misstatement.
In contrast, the recall negative before positive version would reverse the order of recall sets.

3.2.4.2 Dependent Variables

3.2.4.2.1 CE Mental Representation

The CE mental representation is calculated based on the amount of information items recalled. Specifically, it is the proportion of negative CE information items recalled relative to the total number of CE information items recalled calculated as:

\[
\frac{\text{# negative items recalled}}{\text{# negative items} + \text{# positive items}}
\]

Using a proportional based method is consistent with prior research in auditing (e.g., Rau and Moser 1999) and accounting (e.g., Moser 1989). A value of 0.5 occurs when a participant identifies an equal number of positive and negative information items, and higher values represent a more negative mental representation. In addition, alternative operationalizations, such as net items, may also be utilized (e.g., Hoch 1984). Hence, I also utilize an alternative net mental representation that is calculated as:

\[
\text{# negative items recalled} - \text{# positive items}
\]

As such, a negative value occurs when a participant identifies a greater number of positive information items than unfavorable information items, and again greater values represent a more negative mental representation.
3.2.4.2.2 CE Effectiveness Assessment

Participants were asked to provide a preliminary assessment of the effectiveness of the CE on a 11 point scale ranging from -5 (“Very Ineffective”) to +5 (“Very Effective”). This scale was adapted from Cohen and Hanno (2000).

3.2.4.2.3 Subsequent Audit Judgments

Three subsequent audit judgments were captured – two of which relate to the likelihood that the CE would prevent fraud, and one that related to the likelihood of management’s explanation for differences noted in preliminary analytical procedures. As noted previously in the hypotheses development, all three judgments would occur subsequent to a preliminary assessment of CE effectiveness (measured as noted above). Participants were asked to assess the likelihood that the client’s CE would prevent a misstatement arising from fraudulent financial reporting on a 11 point scale ranging from -5 (“Highly Unlikely”) to +5 (“Highly Likely”). Participants were then asked, on a separate page, to assess the likelihood that the client’s CE would prevent a misstatement arising from misappropriation of assets on a 11 point scale ranging from -5 (“Highly Unlikely”) to +5 (“Highly Likely”). Both scales’ endpoint labels were adapted from Agoglia et al. (2003b).

Participants were asked how likely the differences noted between the expected and unaudited ratios were due to client management’s non-error explanation on a 11 point scale ranging from -5 (“Extremely Unlikely”) to +5 (“Extremely Likely”). The scale endpoint labels were adapted from Heiman (1990).
3.2.5 Participants

In total, 80 audit seniors with an average of 2.6 years of audit experience participated in the study. The participating Big 4 audit firm had identified all the participants as appropriate for the CE task. I utilized all available data to test the hypotheses. 59% (or 47/80) of participants were female and 90% (or 72/80) had audit experience with public clients. Participants agreed that the case was understandable (avg. 2.97 significantly greater than the scale midpoint of 0 [t(79)=14.49, p<0.0001]), realistic (avg. 1.90 significantly greater than the scale midpoint of 0 [t(79)=8.11, p<0.0001]), and that the time limits provided sufficient time to complete the experimental materials (avg. 3.14 significantly greater than the scale midpoint of 0 [t(79)=12.99, p<0.0001]). Table 1 illustrates the success of random assignment of participants to experimental conditions.

3.3 Empirical Results

3.3.1 Manipulation Checks

The case manipulations (frame and retrieval strategy) were subjected to manipulation checks. For the frame manipulation, participants were asked “what did the controller indicate was the objective of the design of the internal control system?” on a 11 point scale ranging from -5 (“Discourage Dishonesty”) to +5 (“Encourage Honesty”). Participants attended to the frame manipulation as evidenced by significant frame main effect (F=82.95, one-tailed p<0.0001), with the remaining retrieval order main effect (F=1.44, two-tailed p=0.234) and interaction (F=0.11, two-tailed p=0.736) not statistically significant (results not tabulated).

Although participants had to attend to the retrieval strategy manipulation by

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26 For these three scales, the midpoint of 0 was labelled as neither agree nor disagree.
experimental design, participants were asked whether they agreed with the statement that they were asked to recall strengths of the client’s CE before recalling weaknesses on an 11 point scale ranging from -5 ("Completely Disagree") to +5 ("Strongly Agree"). Participants attended to the retrieval strategy manipulation as evidenced by a significant retrieval strategy main effect (F=354.44, one-tailed p<0.0001), with the remaining frame main effect (F=0.09, two-tailed p=0.764) and interaction (F=0.87, two-tailed p=0.354) not statistically significant (results not tabulated).

3.3.2 Test of H1a and H2a: Causes of CE Mental Representation

First as illustrated in Table 2 Panels A and B, a 2 X 2 MANOVA (frame X retrieval strategy) was conducted where both the proportional operationalization of mental representation (MRprop) and alternative net operationalization of mental representation (MRnet) of the cues recalled were dependent variables. Support for H1a, that positively framed internal control systems will result in auditors’ mental representations to be relatively positive as compared to negatively framed internal control systems, would be evidenced by a frame main effect. Support for H2a, that recalling positive features of the CE prior to recalling negative features will result in auditors’ mental representations to be relatively positive as compared to recalling negative features prior to recalling positive features, would be evidenced by a retrieval strategy main effect. Results are consistent with H2a as evidenced by a significant retrieval strategy main effect (Wilks’ λ=0.777, F(2,75)=10.76, one-tailed p<0.0001). However, the multivariate results do not support H1a as there was a non-statistically significant frame main effect (Wilks’ λ=0.992, F(2,75)=0.31, p=0.734).
Second, by examining MRprop, and as illustrated in Table 2 Panel C, a 2 X 2 ANOVA (frame X retrieval strategy) univariate results provide support for the prediction that retrieval strategy impacts mental representation consistent with output interference and H2a whereby the retrieval strategy main effect is significant (F=10.15, one-tailed p=0.001). However, H1a is not supported as evidenced by a non-statistically significant frame main effect (F=0.56, two-tailed p=0.455).

Third, examining MRnet, and as illustrated in Table 2 Panel D, the 2 X 2 ANOVA (frame X retrieval strategy) univariate results provide support consistent with H2a that retrieval strategy impacts mental representation consistent with output interference whereby retrieval strategy main effect is statistically significant (F=20.83, one-tailed p<0.0001). However, H1a is again not supported as evidenced by a non-statistically significant frame main effect (F=0.59, two-tailed p=0.446). Hence, the findings between the two different operationalizations of mental representation are consistent and provide corroborating support for H2a that retrieval strategy impacts CE mental representations.

Examining the mental representation further, participants who retrieved positive features of the CE first recalled more positive features as compared to participants that retrieved negative information first (t(78)=3.2, one-tailed p=0.001). However, participants who retrieved negative features of the CE first recalled only slightly more negative information as compared to participants who retrieved positive information first, with the difference not statistically significant (t(78)=0.69, one-tailed p=0.245). As such, there is an asymmetry consistent with auditor conservatism – that is, the auditors were able to identify negative information cues of the CE to the same degree between retrieval
strategies. Hence, the auditor mental representation appears to be impacted by the differential ease of recalling positive CE information.

3.3.3 Test of H1b and H2b: Impact of Frame and Retrieval Order on CE Assessment

Given that the case was developed on a company that had an actual fraud, normatively the participants should have rated the CE as being ineffective. However, on an overall basis, the results of a one-sample t-test showed that participants’ preliminary assessments of the effectiveness of the CE was effective (mean of 0.78, std dev=2.3) which is statistically greater than the scale midpoint of 0 (t(79)=2.96, two-tailed p=0.004, results not tabulated). Hence, given that every participant identified at least one negative aspect of the CE (with an average of 3.9 negative items identified), participants appear to inadequately measure or weigh these negative information cues to derive an overall assessment of an ineffective CE.

In order to test H1b and H2b which examine the effects of frame and retrieval strategy on CE assessment, I conduct a 2 X 2 ANOVA (frame X retrieval strategy) with the CE assessment as the dependent variable. Support for H1b, that positively framed internal control systems will result in auditors’ CE evaluations to be relatively positive as compared to negatively framed internal control systems, would be evidenced by frame main effect. Support for H2b, that recalling positive features of the CE prior to recalling negative features will result in auditors’ CE evaluations to be relatively positive as

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27 This finding that auditors are conservative is investigated further in the hypothesis testing section of this dissertation (i.e., chapter 4).
28 As noted previously, the preliminary assessment of the effectiveness of the CE was on an 11 point scale ranging from -5 (“Very Ineffective”) to +5 (“Very Effective”). Given the dichotomy of the scale, the midpoint was not labeled. The scale was adapted from Cohen and Hanno (2000).
compared to recalling negative features prior to recalling positive features, would be evidenced by a retrieval strategy main effect. I find a lack of support for H1b as evidence by a non-statistically significant frame main effect (F=0.60, two-tailed p=0.441), and a lack of support for H2b as evidenced by a non-statistically significant retrieval strategy main effect (F=0.01, two-tailed p=0.915), with the interaction not statistically significant (F=1.07, two-tailed p=0.305) (results not tabulated).

Given the results of H1b and H2b, the conditions for mediation are not met (Baron and Kenney 1986). Specifically, the independent variables frame and retrieval strategy do not impact the outcome variable, CE evaluation. Hence, I do not test H3.

3.3.4 Supplemental Analysis of H1b

The lack of support for H1b is particularly surprising given the robust findings of framing effects on evaluative judgments documented in the literature. One possibility for the lack of support for framing impacting the CE assessment (H1b) is that based on an audit seniors’ experience, they may have developed beliefs as to which of the two frames are more effective. To control for this, I included a question that captured the participants belief as to which frame is a stronger control system as this may interact with the frame manipulation. Table 3 Panel B illustrates the resulting experimental condition cells. The results of a 2 X 2 ANOVA (frame X strength belief) is included in Table 3 Panel A. Due to the marginally significant interaction (F=2.81, two-tailed p=0.098), I decompose the analysis by first holding the frame constant. I find that participants in the encouraging honesty frame evaluated the CE as being significantly stronger when they

29 Retrieval strategy and any interaction thereof in a 2 X 2 ANOVA (frame X retrieval strategy X strength belief) is not significant and as such is not included in the above CE assessment analysis.
believed encouraging honesty was a stronger internal control system as compared to participants that believed discouraging dishonesty was a stronger internal control system as evidenced by a significant strength belief main effect (F=7.82, two-tailed p=0.008, results not tabulated). In contrast, participants in the discourage dishonesty frame evaluated the CE as being similar in strength regardless of their belief as to what makes a stronger internal control system (F=0.19, two-tailed p=0.664, results not tabulated). Although this supplemental analysis does not formally test H1b, the asymmetry in CE judgments provides insights that the encourage honesty framed internal control system may lead some auditors to evaluate the CE as more effective when they believe a control system designed to encourage honesty is more effective as compared to auditors that believed a control system designed to discourage dishonesty is more effective.

Prior research has provided evidence that experience impacts beliefs (e.g., Pei et al. 1992), and therefore if auditors develop beliefs as to which control system is stronger with audit experience, then junior auditors should be more persuaded by the framing manipulation (H1b). To examine this, I conduct a 2 X 2 ANOVA (frame X retrieval strategy) on a sample of 23 junior auditors from the same audit firm, a sample that firm representatives indicated would not have significant CE evaluation experience. Not surprisingly, these juniors had less years of audit experience (F=139.3, p<0.0001), less CE experience (F=152.3, p<0.0001) and less familiarity with COSO (F=22.1, p<0.0001). I find that when these junior auditors retrieve negative information before positive, they evaluate the CE marginally significantly more effective when framed as encouraging

30 Bonferroni t-tests that conservatively correct for pair-wise post-hoc comparisons detect the above difference in means at the 5% level of significance. When holding auditors belief of strength constant, I find no difference in CE judgments between frames regardless of whether the participant believed honesty was a stronger control system (F=0.62, two-tailed p=0.436) or when the participant believed dishonesty was a stronger control system (F=2.12, two-tailed p=0.155) (results not tabulated).
honesty as compared to when it is framed as discouraging dishonesty \( (F=3.37, \text{ one-tailed } p=0.052) \). This result is especially interesting given the lack of statistical power due to the small sample size of junior auditors available to test this prediction. Partially consistent with H1b, this finding provides partial support that management’s honesty frames may lead some auditors to make overly positive CE judgments (results not tabulated).

### 3.3.5 Test of H4: Consequences of CE Mental Representations

Focusing on fraud assessment as the dependent variable, the results of an ANCOVA with retrieval strategy as the independent variable and mental representation as the covariate provide support for H4 that the mental representation impacts auditor fraud assessments. Specifically, as illustrated in Table 4 Panel A and B, when mental representation is operationalized as the alternative net measure, it has a statistically significant effect \( (F=3.28, \text{ one-tailed } p=0.037) \) on fraud assessment with the overall model being marginally statistically significant \( (F=2.59, \text{ two-tailed } p=0.081, \text{ not tabulated}) \). The negative parameter estimate on mental representation indicates that as mental representations increase (i.e., the mental representation become more negative), the auditor’s assessment of the likelihood that the CE will prevent fraudulent misreporting decreases. Results of an ANCOVA with retrieval strategy as the independent variable and the covariate mental representation operationalized as the proportional measure does not achieve statistical significance at conventional levels (overall model \( F=1.95, p=0.150; \text{ MRprop } F=2.01, \text{ two-tailed } p=0.160 \)).

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\( ^{31} \) Given the prior results, the internal control frame is not included in the analysis. Inclusion of internal control frame in a 2 X 2 ANCOVA (frame X retrieval strategy) provides consistent but slightly weaker results.
Focusing on asset misappropriation assessment as the dependent variable, the results of an ANCOVA with retrieval strategy as the independent variable and mental representation as the covariate do not provide support for H4 that the mental representation impacts auditor’s asset misappropriation judgment for either the proportional (F=0.95, two-tailed p=0.334) or alternative net (F=1.06, two-tailed p=0.306) mental representation measure with the overall model, other main effects and interaction not statistically significant in either model.32

Focusing on plausibility assessments of management’s explanation as the dependent variable, the results of a 2 X 2 ANCOVA (frame X retrieval strategy) with the mental representation as a covariate indicate a marginally significant frame by retrieval strategy interaction (F=3.45, two-tailed p=0.067), with all other main effects and interactions not statistically significant.33 Decomposing the interaction, I find that when the control system is framed as promoting honesty, there is a significant retrieval main effect (F=4.43, two-tailed p=0.042) with a non-statistically significant proportional mental representation covariate (F=1.59, two-tailed p=0.215). As illustrated in Table 4 Panel C, the retrieval strategy main effect direction suggests that participants who recall negative CE information first rated management’s explanation as less likely as compared to participants who recall positive CE information first. This finding is consistent with output interference such that the first items recalled would have a greater impact on the judgment. These results do not support H4.

32 Given the prior results, the internal control frame is not included in the analysis. Inclusion of internal control frame in a 2 X 2 ANCOVA (frame X retrieval strategy) provides consistent but slightly weaker results.
33 The results for the plausibility assessment are qualitatively similar between the proportional and alternative net operationalization of mental representation models and as such, only the proportional mental representation model results are discussed.
3.3.6 Supplemental Analysis of H4

Given the mixed results for H4, I refit the respective model noted above with CE assessment as the covariate instead of CE mental representation. I find that auditor judgments of asset misappropriation are impacted by the auditors’ preliminary CE effectiveness assessment as evidenced by a significant CE evaluation main effect (F=17.32, two-tailed p<0.0001). The results suggest that participants who evaluated the CE as more effective believed asset misappropriation would be more likely to be prevented (all results not tabulated).

Similarly, refitting the 2 X 2 ANCOVA (frame X retrieval strategy) model with CE assessment as the covariate instead of CE mental representation provides partial evidence that auditors’ plausibility assessments of management’s explanation is impacted by the initial CE assessment, but only when the internal control system is framed as promoting honesty (F=4.75, two-tailed p=0.036) such that auditors who evaluated the CE as more effective were more likely to believe management’s explanation (all results not tabulated).

3.4 Summary Discussion

The study contained in this chapter examined how auditors developed their mental representation of the CE, and how this mental representation transferred to subsequent audit judgments. Although prior research has suggested that auditors may have deficiencies in their CE judgments, the literature has not examined where in the judgment and decision making process such a deficiency arises. As such, this study is the first to decompose the judgment and decision making process to investigate the effects of management’s frame of
the internal control system and auditors’ retrieval of CE information from memory on auditors’ CE mental representations and subsequent audit judgments. Specifically, my results, which are summarized in Figure 2 Panel B, show that retrieving CE information from memory biases an auditor’s mental representation consistent with output interference theory, such that initially retrieving the relatively abundant positive CE information cues results in the auditor’s mental representation to be overly positive as compared to auditors who retrieve negative CE information cues first. Importantly, and as hypothesized, this positive mental representation transfers to subsequent audit judgments, namely financial statement fraud assessment. Although the fraud literature has examined an auditor’s ability to identify “red flags” (e.g., Loebbecke et al. 1989), the results from my study suggest that auditors’ retrieval of the positive CE information may result in a biased memory which results in an understatement of fraud likelihood or risk.

In addition, I find limited evidence to support the conjecture that management’s framing of the internal control system as encouraging honesty may result in some auditors evaluating the CE as more effective as compared to when the internal control system is framed in the traditional conceptualization as discouraging dishonesty. The finding is of importance because my results find that auditor CE effectiveness assessments impact some subsequent audit judgments (e.g., asset misappropriation assessments). Hence, if utilized by client management as a persuasion tactic, internal control system frames may decrease audit effectiveness. Given the mixed results, future research focusing on internal control systems that encourage honesty would be insightful.

Interestingly, my results do not find support that CE mental representations impact CE effectiveness evaluations. One possible reason for this is that when auditors were exposed
to the CE information list, they may have made “on-line” judgments. That is, the auditors may have arrived at a CE effectiveness decision as they perceived the list of information, rather than relying on their memory as an input into the judgment and decision making process. As noted by prior research (Hastie and Park 1986), this would decrease the probability of identifying a memory effect on judgment. Although this would bias my results to not find a relationship between CE mental representation and CE evaluation, in practice there may be a stronger relationship given that prior literature has noted that auditors rely on their memories during the audit process. Future field research that describes how practicing auditors perform CE assessments and how these assessments impact the audit program would be particularly informative.

As with all designs, there are limitations to the above mental representation experiment. First, because my study is interested in information cue identification, it was necessary to hold the CE information features constant as compared to manipulating the valence of each information item. This design choice limits any inferences with regard to subsequent sub-components of the judgment process. By holding the CE constant, I am able to provide a depiction of an actual company’s CE where fraud occurred, thus providing an external criterion of performance, and have a stronger test of the theory of interest. Second, participants in the study were seniors from a single public accounting firm which may limit generalization of my results. Nevertheless, by utilizing a single firm, I am able to control for any differences in firm CE training and guidance, thus improving the power in my statistical tests. Finally, although my adapted case was extensively pretested and rated understandable and realistic, my study is based on a single case which may limit the generalization of my results.
Ultimately, my study extends prior literature by illustrating that initially retrieving the relatively abundant positive CE information cues from memory causes a positive bias in the auditor’s mental representation, which has consequences for subsequent fraud assessment. My results suggest that CE judgment deficiency findings from prior research (e.g., Agoglia et al. 2003b) are not solely based on how individuals construct justification memos, but also how they construct their mental representation. This distinction is important as different interventions (e.g., training, decision aids, etc.) are necessary pending the cause of the judgment deficiency.
Chapter 4

Auditor Hypothesis Testing of the Control Environment

This chapter presents a second study that examines a separate cognitive process necessary in the auditor’s CE evaluation – namely hypothesis testing. This chapter begins by outlining what the research questions are, why they are important, and how I intend to answer them. In order to illustrate audit institutional differences, I juxtapose the generic psychology hypothesis testing literature with the auditor hypothesis testing literature. I then develop hypotheses based on the psychological process and the audit institutional context. The following section then discusses the experimental method followed by the empirical results. The final section of this chapter contains a summary discussion of the hypothesis testing experiment with implications for practice.

The CE has been identified as providing the foundation for the effective operation of internal control over financial reporting. It includes such overarching controls as managerial ethicality and competence (i.e., the tone at the top). Auditors must evaluate the CE due to its pervasive nature, yet no study to date examines how auditors conduct and tailor their testing strategies of CE components. Although there is a stream of audit literature that examines how auditors evaluate characteristics, such as competence, of other external and internal auditors, there has been little research that has examined how auditors examine or test such person specific characteristics of client management. This is a critical question as characteristics such as client management ethicality and competence are fundamental components of the client’s CE (e.g., ISA 315; COSO 1992). As such, my research questions are two-fold: (a) how does an auditor test their
hypothesis of client management’s ethicality and competence, and (b) how do decision aids impact auditor hypothesis testing?

Examining the factors that influence auditor hypothesis testing in a CE task is important because auditors may need to tailor their audit tests to yield the most diagnostic information possible in determining their reliance on the client’s foundation of internal controls. Effectively assessing client management’s ethicality and competence is crucial as prior research has found that investors are concerned about such company-level control weaknesses (e.g., Mercer 2004) on accrual quality (e.g., Doyle et al. 2007a) which is the earnings attribute that is most strongly associated with the cost of equity (Francis et al. 2004). Furthermore, credit rating agencies have expressed more concern about entity wide control issues than account specific issues in revising credit ratings (e.g., Moody’s 2006). Hence, understanding and improving auditor hypothesis testing strategy is critical as such judgments will affect audit quality on a company-wide basis.

To answer the research questions, I conduct an experiment that examines how auditors test two important CE components, client management ethicality and competence. This study develops predictions based on cue-diagnosticity (e.g., Skowronski and Carlton 1987; Devine et al. 1990) to predict auditors intend to utilize a diagnostic hypothesis testing strategy (e.g., Trope and Bassok 1982) when testing the person specific characteristics (i.e., traits) of client management.\textsuperscript{34} A diagnostic testing strategy is evidenced by the auditor searching for the most informative information, whereas a conservative testing strategy is evidenced by the auditor searching for negative information (i.e., risks). Importantly, the two traits of interest, client management ethicality and competence, are theoretically structured differently (Reeder and Brewer

\textsuperscript{34} Refer to footnote #1 for definitions of “traits” and “dispositions”.

46
1979; Devine et al. 1990) which provides a unique setting in which to examine auditor hypothesis testing strategy. Specifically, although diagnosticity would provide similar predictions as auditor conservatism (Smith and Kida 1991; Kida 1984) when testing client management ethicality, the diagnosticity prediction differs from auditor conservatism when testing client management competence. Hence, this study examines whether auditor conservatism inhibits an auditor from conducting the most diagnostic audit tests of the CE. Alternatively, auditors may overcome their conservative tendencies to conduct the most diagnostic audit tests of the CE. The impact of two types of decision aid interventions, one currently used in practice (i.e., checklist) and one based on theory (i.e., schema) are investigated.

4.1 Hypotheses Development

4.1.1 Client Management Ethicality and Competence in the Audit Context

The characteristics of ethicality and competence have been emphasized as being critical components of how people are perceived (e.g., Wojciszke 2005; Wojciszke et al. 1998).35 Audit standards (ISA 240; ISA 315; SAS 99; SAS 109; ISQC 1) and control frameworks (COSO 1992; CoCo 1995) have reiterated the importance of client management ethicality and competence in the conduct of an audit as these are critical in the auditors’ assessment of the CE, which is the foundation for internal control and which sets the tone for the organization influencing the probability of fraud (CICA 2002, 15-29). Interestingly, although there is a stream of audit literature that examines how

35 Note that in the psychology literature, ethicality and honesty are part of an individual’s morality. The interested reader is referred to Goldberg (1990); Slote (2000); Anderson (1968); Reeder (1993); Murphy (1993) and McFall (1987) for further discussion. Competence is part of an individual’s ability (Reeder and Brewer 1979).
auditors evaluate characteristics, such as competence, of other external (e.g., Tan and Jamal 2001; Tan and Jamal 2006; Kennedy and Peecher 1997) and internal (e.g., Brown 1983; Schneider 1984; Margheim 1986) auditors, there has been little research that has examined how auditors examine or test such characteristics of client management.

4.1.2 Auditor Hypothesis Testing

The focus of hypothesis testing research is to examine what information or strategy decision makers utilize to narrow down the hypothesis set to arrive at a conclusion (e.g., Trope and Liberman 1996; Kida 1984; Church 1991; Asare et al. 2000). Hypothesis testing is a cognitive process (Bonner 2008) whereby individuals, “typically gather further information that serves as evidence in support of or against initially generated hypotheses” (Bonner 2008, 138). The hypothesis testing process, “can be decomposed further into specifying questions (or tests), interpreting answers (or feedback), and revising hypotheses” (Brown et al. 1999, 1). This study focuses on the first stage of the hypothesis testing process, specifically the tests that the auditor would conduct to test a particular CE hypothesis.

In performing the necessary CE task, auditors have a broader array of evidence gathering techniques available to test their hypotheses (ISA 500; CAS 500; CICA 5300; SAS 106), such as external confirmations (ISA 505), as compared to contexts in the generic psychology literature (e.g., Trope et al. 1984; Trope and Bassok 1983). Given that audit studies have shown that information search deficiencies are prevalent (Asare and Wright 2003; Green and Trotman 2003), examining and improving the effectiveness

36 Note that some studies utilize the term hypothesis evaluation to refer to hypothesis testing.
37 A hypothesis may be generally defined as, “…possible states of the world…” (Gettys and Fisher 1979, 93). For example, there may be different hypotheses to explain fluctuations in analytical procedures.
of auditor test design in a CE task is a critical element of audit quality given the
pervasiveness of such judgments on the conduct of the audit (Ayers and Kaplan 1998;
Beaulieu 2001; Kizirian et al. 2005).38

The hypothesis testing auditing literature has found that when auditors perform
experience appropriate tasks, there is little evidence to suggest they use a confirmatory
testing strategy (e.g., Kida 1984; Trotman and Sng 1989; Butt and Campbell 1989).39 In
a review, Smith and Kida (1991) conclude that, “…the evidence suggests the use of an
information-search strategy not typically found in other contexts that is explained readily
by conservatism” (p.483). Given the diverse definitions of “conservatism” in prior audit
(e.g., Krishnan 1994) and accounting (e.g., Watts 2003) literature, it is critical to note that
the term used by Smith and Kida (1991, p.486) and in this study is in reference to the
valence of information, or more specifically, an auditor’s asymmetric preference or
sensitivity to risks.40 Importantly, this finding that auditors tend to seek or select negative
evidence is separate from their differential processing or use of negative information.
This study focuses on the former.41

More recent research has found further evidence of conservative hypothesis
testing strategies in auditors. Asare et al. (2000) found that accountability not only
increased the extent of audit testing, but also encouraged conservative hypothesis testing
by increasing auditor focus on testing error related hypotheses, as compared to non-error

38 Johnson et al. (2001) suggest that one “bug” in an auditor’s deception detection process occurs at the
hypothesis testing phase.
39 For exceptions, see Bamber et al. (1997) and Peterson and Wong-On-Wing (2000).
40 The underlying cause (e.g., training, incentives, etc.) of this asymmetrical sensitivity to negative
information is beyond the scope of this paper. Refer to Ashton and Ashton (1990) for further details.
41 With regard to the latter, related research has found that auditors are more sensitive in their belief
revision to negative evidence than positive (e.g., Ashton and Ashton 1988; Ashton and Ashton 1990).
hypotheses. In contrast, time budgets were found to reduced the extent of testing.\textsuperscript{42} In addition, when auditors receive additional information, they revise their probability assessment of the single hypothesis they are testing without revising the probability assessment of competing hypotheses which Asare and Wright (1997a) interpret as further evidence that auditors are conservative in that an “independent evaluation” would result in increased evidence collection as auditors would not be satisfied to justify their work with indirect evidence on a competing hypothesis. Furthermore, Asare and Wright (1997b) found that auditors are not only hesitant to eliminate a hypothesis from a set, but are prone to resuscitate the hypothesis after elimination and can be interpreted as further evidence of auditor’s use of a conservative hypothesis testing strategy.\textsuperscript{43}

4.1.3 Psychological Processes

To be clear, when evaluating the effectiveness of the CE, \textit{an auditor will use a hypothesis testing strategy when testing client management’s traits}, specifically ethicality and competence. Task characteristics are an important determinant of testing strategy (Klayman and Ha 1987, 222), and testing hypotheses of an individuals’ traits, such as ethicality and competence, has unique task characteristics (Devine et al. 1990, 954) as compared to other audit tasks such as analytical procedures (e.g., Asare et al. 2000).\textsuperscript{44} Prior research by Trope and colleagues questioned whether the proneness to seek confirmatory information when testing an unknown individual’s characteristics (Klayman

\textsuperscript{42} Asare et al. (2000) define extent of testing in terms of the number of tests which can then be decomposed into, “breadth (the number of hypotheses tested), depth (the number of tests per hypothesis), and focus (the number of tests examining error versus non-error causes” (p.544).

\textsuperscript{43} Related research (e.g., Heiman-Hoffman et al. 1995) has examined the impact of hypothesis generation on hypothesis testing. For example, Bhattacharejee et al. (1999) investigate how the generated size of hypotheses set may impact hypothesis testing as it relates to auditor efficiency and accuracy.

\textsuperscript{44} For example, given that traits and dispositions are internal person specific characteristics, and hence not directly observable, they must be inferred from behavioral evidence (e.g., Reeder and Brewer 1979).
and Ha 1987; Snyder and Swann 1978; Snyder and Campbell 1980) was confounded by the informational value of the questions.\footnote{In the literature, confirmatory hypothesis testing strategy has been defined in numerous ways (for a review, see Skov and Sherman 1986). Although this study is not directly interested in confirmatory hypothesis testing, for definitional purposes, confirmatory hypothesis testing will be defined consistent with prior auditor information search literature as the propensity to which, “...individuals are inclined to search for evidence that is expected to confirm their hypotheses” (Church 1990, 81) which is consistent with Klayman and Ha (1987, p.212; 222) and Bassok and Trope (1983, p.200).} Their studies (Trope and Bassock 1982; Trope and Bassock 1983; Bassok and Trope 1983; Trope et al. 1984) found that individuals gathered information of an unknown individual’s traits by utilizing a diagnostic hypothesis testing strategy rather than a confirmatory strategy. Diagnostic hypothesis testing strategy has been defined as the search for information or evidence that maximally differentiates between the hypothesis and other possible alternative hypotheses (Devine et al. 1990, 953; Trotman and Sng 1989, 568). It is necessary to elaborate on the underlying psychological processes as it relates to testing hypotheses about traits. Reeder and Brewer (1979) developed a theoretical framework supported by subsequent empirical research (e.g., Reeder et al. 1982; Reeder and Spores 1983; see Reeder 1993) to conceptualize a decision maker’s schema, or underlying assumptions of the likely behaviors given a particular disposition of a trait. For example, considering the trait of honesty, a person may be predisposed to be honest or dishonest. Importantly, individuals who are honest are more behaviorally restricted than dishonest individuals. This means that honest individuals may only behave honestly, whereas dishonest individuals may behave dishonestly or honestly in different contexts (e.g., situational constraints). As such, observation of a dishonest behavioural act would be of greater diagnostic information than observation of an honest act for ascertaining the target individual’s underlying trait disposition. Stated differently, observing an honest act would not
discriminate between the underlying dispositions to the same degree as observing a dishonest act. Likewise, a student achieving an A+ on an exam is more diagnostic of the students’ intellectual ability than a failing grade (i.e., the failing grade may have been caused by situational constraints such as a non-conducive work schedule not leaving enough time for a student with a potential for a high grade to study).

Research by Skowronski and Carlston (1987) provide support for the conjecture that negative morality behaviors such as dishonesty were perceived as being more diagnostic of the underlying trait disposition than positive moral behaviors such as honesty. In contrast, positive ability behaviors, such as competence, were perceived as more diagnostic of the underlying trait disposition than negative ability behaviors such as incompetence (see also Skowronski 2002).  

Specific to hypothesis testing, Devine et al. (1990) questioned whether a decision maker tests their hypothesis of an unknown individuals’ underlying disposition by gathering information (i.e., questioning) in a diagnostic fashion, or does the decision maker follow a confirmatory hypothesis testing strategy? Across three experiments, consistent results emerge providing persuasive evidence that decision makers have a primary preference to utilize a diagnostic hypothesis testing strategy by asking the most informative questions (as it relates to the traits of honesty-dishonesty and introversion-extroversion), and a secondary preference for confirmation. This finding was robust to whether participants generated questions (i.e., designed tests) to obtain information, henceforth referred to as the test specification paradigm, or whether participants selected questions from a menu listing, henceforth referred to as the test selection paradigm.  

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46 Skowronski and Carlston (1987) provide evidence that although information cues are weighted based on diagnosticity, memory was correlated with information cue atypicality rather than diagnosticity.
The above theoretical framework would predict that auditors will utilize a high diagnostic hypothesis testing strategy when testing their CE hypothesis regarding client management’s ethicality and competence, and therefore will use tests that focus on unethical and competent behavior. Prior audit literature (Einhorn 1976; Libby 1985) has characterized the audit process as a diagnostic problem, whereby the auditor diagnostician designs tests to yield the most informative information (e.g., Knechel and Messier 1990). Given that a diagnostic hypothesis testing strategy, by definition, yields the greatest degree of information to the decision maker for discriminating between the working hypothesis and alternatives, it would be expected that the auditor will intend to utilize such a strategy. Stated formally:

**H5a:** Auditors will use more unethical than ethical type tests.

**H5b:** Auditors will use more competence than incompetence type tests.

However, there is tension in the above conjecture as the literature to date has provided little evidence, and at best mixed results (e.g., Brown et al. 1999), as to whether auditors test hypotheses utilizing a diagnostic strategy. Specifically, Trotman and Sng (1989) found that even when auditors are explicitly informed of what information is diagnostic, they still tended to utilize low diagnostic information in the judgment process leading them to conclude that their results, “...does not support the dominating effect of the diagnostic strategy...” (p.573). Also, McMillan and White (1993) interpreted their findings of auditor evidence search behavior was not a function of a diagnostic strategy.

As discussed above, in numerous audit studies (Smith and Kida 1991), it appears that auditors have a tendency to develop tests to search for negative information (also see
previous chapter). Prior literature has conjectured that, “in the audit context, diagnostic hypotheses initially relate to the possible existence of financial statement errors” (Libby and Frederick 1990, 349), or stated differently, designing tests to yield negative information may be the most informative. A conservative hypothesis testing strategy would predict that auditors will utilize tests to focus on unethical and incompetent behavior. Stated formally:

H6a: Auditors will use more unethical than ethical type tests.

H6b: Auditors will use more incompetence than competence type tests.

There is tension in the above conjecture because, as noted previously, auditor examination of client management ethicality and competence is a fundamentally different audit task (as compared to analytical procedures for example). That is, when developing an understanding of the entity and the entity’s CE, audit standards explicitly note that the auditor must attend to the positive information, including honesty and ethical behavior, not just the negative information (ISA 315.14).

As illustrated in H5a, H5b, H6a, H6b, a diagnostic hypothesis testing strategy and a conservative hypothesis testing strategy are not necessarily mutually exclusive, but are conceptually distinct. Specifically, although H5a and H6a provide identical predictions, H5b and H6b are in opposing directions. Hence, by utilizing the strength of the experimental method in a unique audit context, this study is able to disentangle how auditors test their CE hypotheses.47

47 Note that both a diagnostic and conservative hypothesis testing strategy are not impacted by the working hypothesis as compared to a confirmatory hypothesis testing strategy that is. As stated earlier, this study is not focused on confirmatory hypothesis testing strategies, and as such there is no formal
4.1.4 Strategy Acquisition: Learned vs. Innate Ability

Research has not explicitly examined the underlying causes of the diagnostic strategy. However, the audit literature examining the dilution effect, that is the tendency for non-diagnostic information to dilute diagnostic information (e.g., Hackenbrack 1992; Glover 1997) has led some researchers to speculate (Hoffman and Paton 1997) that the dilution effect is a “hardwired” data bias, and therefore a decision aid or training may be necessary to improve judgment (see Kennedy 1993; 1995). The results of Shelton (1999) corroborate this assertion – specifically auditors with more experience, “have highly developed knowledge structures and use directed strategies to focus on only relevant information” (p.219) as compared to inexperienced auditors whose less developed knowledge structures and sequential information search strategies increase the diluting effect of non-diagnostic information. Outside of auditing, Hunton and McEwan (1997) found evidence that experienced financial analysts tend to utilize a directed information search strategy resulting in increased performance as compared to inexperienced analysts who use a sequential search strategy (for a review, see Bouwman and Bradley 1997).

Given that an auditor’s hypothesis testing strategy appears to be acquired or learned over time (e.g., Salterio 1996a; Kaplan and Reckers 1989), one can conjecture that there may be an intervention (e.g., decision aid or training) that can aid auditors in learning or utilizing the diagnostic strategy. As an example in the financial accounting context, Hodge et al. (2004) found that search-facilitating technology increases financial statement user acquisition and integration of information.

hypothesis advanced. However, by experimental design, I am able to examine the extent to which auditors utilize confirmatory strategies.
I conjecture that given the current audit task and theoretical schematic framework (Reeder and Brewer 1979), a decision aid that focuses the auditor on the implications of these schematic relations may be an effective tool to improve decision making. For example, in the educational psychology and learning literature, Robins and Mayer (1993) has found that training which focuses on schematic relations may improve accuracy in decision making and Ahn et al. (1992) has found that in some cases, schema may even be acquired from a single example. Furthermore, in the trait hypothesis testing psychology literature, diagnostic hypothesis testing behavior was increased by simply providing the alternative trait hypothesis (e.g., Hodgins and Zuckerman 1993; Trope and Mackie 1987). Hence, a decision aid intervention that enriches the hypothesis testers’ schematic relations may be an effective tool to increase the use of the diagnostic hypothesis testing strategy. Stated formally:

H7a: A schematic decision aid increases unethical type tests as compared to the unaided control condition.

H7b: A schematic decision aid increases competence type tests as compared to the unaided control condition.

4.1.5 Strategy Activation: Situational vs. Automatic

The utilization of a diagnostic hypothesis testing strategy has been found to be impacted by situational constraints, such as the cost of gathering information (e.g., McDonald and Brodsky 1997; Van Wallendael and Guignard 1992; McDonald 1990; De
Specific to accounting, research in taxation (Cloyd and Spilker 1999) has found that client preferences can impact tax professionals information search behavior which may lead to aggressive tax advice, especially when the client has low practice risk (Kadous et al. 2008). Although audit research has found that client preferences may not necessarily impact auditor accounting treatment decisions (Salterio and Koonce 1997; Salterio 1996b), other institutional features common in audit practice, for example evidence complexity (Ricchiute 2010), has been found to impact information search strategies. Some feature of the CE audit context may impede an auditor from utilizing a diagnostic hypothesis testing strategy.

The most widely used control framework, COSO (1992), outlines a list of tools that auditors utilize (Agoglia et al. 2003b; Cohen and Hanno 2000) to evaluate the CE in a checklist format. Consistent with the notion that structured checklist decision aids may prevent decision makers from acquiring and utilizing knowledge structures (Glover et al. 1997), I conjecture that the COSO structured checklist aid prevents the auditor from utilizing the schematic associations necessary to conduct a diagnostic trait hypothesis testing strategy. For example, Barrick and Spilker (2003) found that a decision aid moderated the relationship between knowledge and information search strategy. Specifically, in the absence of any decision aid, tax professionals’ knowledge had a significant effect on their information search strategy, but the relationship was eliminated when tax professionals utilized a checklist type decision aid. These findings suggest that the structured checklist decision aid contained in the COSO (1992) tools may impede the auditor from utilizing a diagnostic hypothesis testing strategy. Stated formally:

As noted previously, this study does not examine the auditors’ inferences from the behavioral evidence (e.g., Uleman et al. 1996; Carlston and Skowronski 1994; Carlston et al. 1995; Wong-on-Wing et al. 1989; Krull et al. 1999; Maass et al. 2001; Uleman et al. 1986).
H8a: A checklist decision aid decreases unethical type tests as compared to the unaided control condition.

H8b: A checklist decision aid decreases competence type tests as compared to the unaided control condition.

4.2 Research Method

4.2.1 The Experimental Setting

The importance of testing CE hypotheses appears especially important in contexts whereby there has been limited prior experience (e.g., Tan 1995) with the particular target individual (e.g., CFO), and therefore greater uncertainty regarding the target individuals’ underlying trait disposition. I choose to focus on the CFO as the target individual because prior research has documented that CFO personal characteristics, or “styles”, is an important determinant of financial reporting practices (Ge et al. 2010). In the audit context, the greatest uncertainty regarding the CFO would occur when the audit firm has accepted a new client (e.g., Beaulieu 2001), or when there has been client-management turnover (e.g., Mian 2001; Fee and Hadlock 2004; Menon and Williams 2008). In order to focus the auditor participant on the CFO, the experimental setting features a repeat audit client that experienced CFO turnover during the fiscal year. The background information is followed by a brief introduction to the client-management team, including the CFO (i.e., target individual), board of directors, and audit committee.
4.2.2 Experimental Procedures

Participants received brief instructions informing them to assume the role of the auditor involved in the preplanning stage of the integrated audit. They then read Part A of the experimental materials which contained a common set of background information which was adapted from prior research (McCracken et al. 2011 and Agoglia et al. 2003b with permission) in order to reflect the current difficult economic environment. This was followed by further details as to their task of developing audit tests to gain a better insight into the effectiveness of the CE as it is impacted by the new unfamiliar CFO.

The participants then proceeded to Part B of the experimental materials which was the ethicality trait dimension, and were randomly assigned to their inherited trait hypothesis as being either ethical (restricted end of the trait continuum) or unethical (unrestricted end of the trait continuum). The participant was then asked to prepare at a minimum five audit procedures to test the hypothesis regarding the new CFO. Before listing their audit procedures, participants were randomly assigned to a decision aid condition as being either the checklist aid, schematic aid, or no aid control condition. After listing their audit procedures, and on a separate page, the participants were informed that the engagement audit partner had developed eight possible audit procedures, and their task was to rank the top four procedures that they would select to test their inherited hypothesis which was held constant. The participants were instructed not to add any of these procedures to their previous listing. The appropriate decision aid

49 The order of trait dimensions was not manipulated. The CE structure begins with ethicality and then proceeds to competence. As such, randomizing the order would be counter to the audit institutional context. This was corroborated in audit partner discussions during pretesting. Furthermore, prior research (e.g., Devine et al. 1990) that has manipulated the order of trait dimensions has found that the order does not impact hypothesis testing results.

50 In addition to the audit procedure, participants also indicate what specific evidence is sought with details regarding what the auditor is to note, source documents of interest, etc.
was then again presented, where appropriate, and the participant then ranked their top four selections.

Participants then proceeded to Part C of the experimental materials which was the competency trait dimension, and were randomly assigned to their inherited trait hypothesis as being either incompetence (restricted end of the trait continuum) or competence (unrestricted end of the trait continuum). The participants remained in the same decision aid condition as for the first trait, and then completed the same tasks (i.e., first listing procedures, and then ranking the top four procedures from a menu). Finally, participants proceeded to Part D of the experimental materials which contained debriefing questions and manipulation checks. On average, the experimental materials were completed in approximately 45 minutes.

4.2.3 Experimental Design

4.2.3.1 Overview and Independent Variables

The experiment is a 2 Trait Dimension (ethicality vs. competence) X 2 Trait Hypothesis (restricted vs. non-restricted) X 3 Decision Aid (control vs. checklist vs. schematic) X 2 Test Type (restricted test vs. non-restricted test) mixed factorial design whereby trait dimension is a within subject variable, trait hypothesis and decision aid are between subject variables, and test type is a repeated measure.51

Two client management trait dimensions, ethicality and competence, are examined within-subjects. These two client management trait dimensions are explicitly identified in internal control frameworks (COSO 1992, CoCo 1995) as being critical.

51 The experimental design relies upon the theoretical definition of diagnosticity which increases the theoretical contribution of the study.
components of the CE influencing the organization’s tone, and therefore impacting auditor reliance on internal controls.

For each trait dimension, participants inherit (i.e., receive) by random assignment a between-subject **trait hypothesis** to be tested which is either extreme end of the respective trait continuum. For example, for the ethicality trait dimension, one hypothesis would be that the CFO is ethical (restricted end of the continuum), and the other hypothesis would be that the CFO is unethical (non-restricted end of the continuum) as it relates to his financial reporting and internal control over financial reporting responsibilities.\(^{52}\) Likewise, for the competence trait dimension, one hypothesis would be that the CFO is competent (non-restricted end of the continuum), and the other hypothesis would be that the CFO is incompetent (restricted end of the continuum) as it relates to his financial reporting and internal control over financial reporting responsibilities.

The third factor manipulated between subjects is the **decision aid** provided to the participant to aid in their test specification and test selection (control condition with no decision aid, checklist decision aid, or schematic decision aid). For each of the two traits of interest, ethicality and competence, points of focus were adapted from the COSO (1992) tools resulting in six points of focus for each trait with minor wording changes.\(^{53}\) The six points of focus were then presented in two different formats: a checklist decision aid and a schematic decision aid. Importantly, each decision aid contained the same information content, but only differed in its presentation.

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\(^{52}\) The CFO in the case is male, which was chosen due to the high proportion of male CFO’s documented in the accounting literature (e.g., Ge et al. 2010).

\(^{53}\) In the COSO (1992) tools, there are six points of focus for the ethicality dimension. There are less points of focus for the competence dimension. In order to keep the number of points consistent, several points of focus that relate to competence were adapted from the human resources component of the CE.
The checklist decision aid (see Figure 3 Panel A and Panel B) was in a format similar to that used by COSO (1992) in their “points of focus”. The schematic decision aid (see Figure 4 Panel A and Panel B) was constructed similar to a fault tree (e.g., Fischhoff et al. 1978) whereby, in a diagram format, potential causes (i.e., hypotheses) of the problem situation are distinguished and organized by providing points of focus to address each of the possible causes. Theoretically, this format allows the decision maker to have a richer schema of the problem situation (see Fischhoff et al. 1978).

The fourth factor, test type, is a repeated measure that captures the outcome variable, extent of audit testing, at two points that differ with regard to their test focus – unethical audit test type (unrestricted) versus ethical audit tests type (restricted) and competence audit test type (unrestricted) versus incompetence audit test type (restricted).54 In order to examine how auditors select their audit tests (as compared to audit test specification), two menus of audit tests were developed, one for the ethicality trait dimension and the other for the competence trait dimension (see Figure 5 Panel A and Panel B). The construction of these tests was based on a review audit textbooks, professional literature (e.g., Ramos 2008; McFarlane and Gold 2003; Dopp and Allan 1996), audit standards, and deduction by the author. Eight audit procedures were constructed for each trait. Four of the eight procedures were ethical and incompetent test types (restricted end of the trait continuum), and the remaining four were unethical and competence test types (unrestricted end of the trait continuum).

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54 For illustrative purposes, an ethical audit test type searches for evidence of ethical behavior (e.g., CFO acknowledgment of company code of conduct), whereas an unethical audit test type searches for evidence of unethical behavior (e.g., CFO claiming inappropriate items on expense reports). Likewise, a competence audit test type searches for evidence of competent behavior (e.g., CFO possesses the necessary credentials) whereas an incompetence test type searches for evidence of incompetent behavior (e.g., CFO has weaknesses in technical accounting knowledge).
4.2.3.2 Dependent Variables

The outcome variable of interest, *extent of audit testing*, is measured in two ways. First, at each point of the repeated measure, the audit tests that are listed by each participant are counted. That is, the tests specified by the participants are counted and coded by the researcher as either a test that focuses on whether the CFO is ethical / incompetent (restricted) or whether the CFO is unethical / competent (non-restricted). Secondly, at each point of the repeated measure, the audit tests selected from the pertinent test menu are counted. The participants ranked four tests, and the highest priority test received a weight of four, their second highest priority test received a weight of three, their third highest priority test received a weight of two, and their fourth highest priority test received a weight of one. Tests that were not selected from the menu did not receive any weight. Note that focusing on the number of tests is consistent with prior hypothesis testing audit research (Asare et al. 2000) that defined the extent of audit testing as the number of tests.

Designing the experimental materials to have participants list their audit procedures first allows the participants to actively construct and richly describe the audit procedures they would intend to utilize. The subsequent task of rank selecting audit procedures from a menu is based on previous research that has documented that auditors are frequently asked to select from a standard menu of tests (e.g., Dowling and Leech 2007). Structuring the experimental materials such that the audit procedure generation task is prior to the audit procedure selection task reduces the possibility that the menu selections would impact the audit procedures generated.
The above design and theoretical predictions is illustrated in Table 5. Note that although diagnosticity (H5a) would provide similar predictions as auditor conservatism (H6a) when testing the client management ethics, the diagnosticity (H5b) prediction is in the opposite direction from conservatism (H6b) when testing client management competence. The above theoretical framework does not predict confirmatory hypothesis testing, and as such, the trait hypothesis main effect, and any interaction thereof, is not expected to be significant.\textsuperscript{55} Nevertheless, the experimental design is able to capture confirmatory hypothesis testing strategies if they are indeed present. For greater clarity, and as illustrated in Table 5 each trait is examined individually in a collapsed 3 Decision Aid X 2 Test Type experimental design.

4.2.3.3 Experimental Pretests

The experimental materials were pretested in three stages. First, three expert practitioners read the materials, decision aids, and the menu of audit tests. The experts provided feedback regarding case realism, task realism and importance, decision aid usefulness, and audit test quality. Based on the feedback, minor changes were made to the case and decision aids in order to improve clarity. Furthermore, the experts found the decision aids to be very useful, and found the audit tests to be rigorous and practically useful.

Second, the experimental instruments were pretested on 46 undergraduate audit students at a large Canadian university. Pretest results verified that the case

\footnote{As such, it is anticipated that the above model will collapse from a 2 Trait Dimension X 2 Trait Hypothesis X 3 Decision Aid X 2 Test Type mixed model to a 2 Trait Dimension X 3 Decision Aid X 2 Test Type mixed model.}
manipulations were operating as intended, the time to complete the experimental materials was adequate, and the materials continued to be understandable.

Finally, a separate expert panel consisting of four audit partner and audit senior manager participants with an average of 12.5 years of audit experience examined the menu of audit tests and evaluated each audit test based on the focus of the test and the perceived strength of the test. Specifically, the four unethical tests were more focused on testing the unethical aspect of the trait dimension whereas the four ethical tests were more focused on testing the ethical aspect of the trait dimension ($t_{15}=5.59, p<0.0001$). However, the overall strength of the four unethical tests was not statistically different from the overall strength of the four ethical tests ($t_{15}=1.71, p>0.10$). Furthermore, the four competence tests were more focused on testing the competence aspect of the trait dimension whereas the four incompetence tests were more focused on testing the incompetence aspect of the trait dimension ($t_{15}=8.54, p<0.0001$). Finally, the overall strength of the four competence tests was not statistically different from the overall strength of the four incompetence tests ($t_{15}=1.19, p>0.10$). The expert panel pretest results provide support that the menu of tests was constructed as intended.

### 4.2.4 Participants

In total, 115 auditor participants were recruited to participate in the study. Of these, 48 participants were audit seniors from a single Big-4 firm. The firm representatives identified the participants as having appropriate experience to perform CE evaluations. The remaining 67 participants were auditors attending an academic program at a large Canadian university. Both groups of participants in the study had a statistically
significant level of CE evaluation experience ($t_{47}=18.42$, $p<0.0001$ and $t_{66}=15.8$, $p<0.0001$ respectively) and statistically significant level of familiarly with the COSO framework ($t_{47}=18.30$, $p<0.0001$ and $t_{66}=21.98$, $p<0.0001$ respectively). The average number of years of audit experience was 2.6 and 1.8 respectively, with an overall average of 2.1 years of audit experience. The experience level of participants in this study is consistent with prior literature. Controls for subject type does not affect any results, and as such, I combine these participants and use all data available for my statistical tests. There was no statistical difference in audit years of experience between experimental conditions. 50.4% (or 58/115) were female; 40% (or 46/115) were male; 9.6% (or 11/115) did not indicate.

4.3 Empirical Results

4.3.1 Manipulation Checks

The case manipulations (ethicality trait hypothesis, competency trait hypothesis, and decision aid) were subjected to manipulation checks. Participants attended to the ethicality and competency trait hypothesis as evidenced by a statistically significant trait hypothesis main effect ($F=19.55$, $p<0.0001$ and $F=24.01$, $p<0.0001$ respectively) with the decision aid main effect and interaction not statistically significant.57

In regard to decision aids, I utilized two questions to capture whether participants

56 This level of audit experience is consistent with Agoglia et al. (2003b). Furthermore, Abdolmohammadi (1999) found that assessment of competence of accounting personnel (task OR 36), examination of alleged improper managerial behavior (task OR22), all CE tasks (task CS3, CS24, CS25, CS26, CS27), and all competence related tasks (task CS28, CS29, CS30) were performed by audit seniors or lower ranks.

57 I also captured to what extent the participants assigned trait hypotheses (unethical vs. ethical and competence vs incompetence) was important to the integrated audit. All hypotheses were found to be highly important and statistically greater than the scale midpoint (results not tabulated).
were cognizant of the presence of their decision aid.\textsuperscript{58} Both variables provided the same results whereby a decision aid main effect was found with the remaining trait hypothesis main effect (one model utilizing the ethicality trait hypotheses and a second model utilizing the competency trait hypotheses) and interaction thereof not statistically significant. Given that there are three decision aid conditions, the statistical significance suggests that at least one of the decision aid condition means is different from the others. As such, I use the bonferonni procedure to detect differences in means, and find support that the checklist and schematic decision aid conditions were equally cognizant of the presence of the decision aid and both were statistically different from the control condition at the 5\% level of significance in the predicted direction. Hence, the decision aid manipulation is working as intended as participants were aware of the presence or absence of the aid.\textsuperscript{59}

4.3.2 Test of H5a and H6a – Test Specification

I first examine the audit tests specified by the auditor. To provide an overall test of H5a and H6a, I capture the auditors’ testing focus by the number of unethical tests specified divided by the number of ethical tests specified. A ratio value of 1.0 indicates that there was an equal number of unethical and ethical tests specified. However, a ratio

\textsuperscript{58} The first question asked whether there was guidance in the form of “evaluation tools” to aid in developing and selecting audit tests/procedures whereas the second question asked whether there was a diagram or checklist provided.

\textsuperscript{59} Providing further evidence that participants used the decision aid, I asked participants in the checklist and schema decision aid conditions whether they found the tool useful, and I asked participants in the control condition whether they believe such a tool would have been useful. The bonferonni procedure found no statistically significant differences between conditions suggesting that the checklist and schema decision aid conditions found both decision aids equally useful, and the control condition equally believed a decision aid would have be useful. Overall, the mean response to these questions was statistically greater than the scale midpoint (t\textsubscript{109}=12.87, p<0.0001), hence there is evidence that participants were not only cognizant of the decision aid, but also used the decision aid in their given task.
value greater than 1.0 indicates that there was a larger number of unethical tests specified which is consistent with H5a and H6a. On an overall basis, the average ratio value is 1.64 (std dev 1.3) which is statistically significantly greater than 1.0 (t_{104}=5.00, p<0.0001).

To examine in more detail, I conduct 2 X 3 X 2 repeated measures ANOVA (trait hypothesis X decision aid X test type) with the extent of audit testing as the dependent variable. As Table 6 Panel A indicates, I find a statistically significant test type main effect (F=16.48, p<0.0001), however this is qualified by interactions. Table 6 Panel B provides descriptive statistics of the unethical and ethical tests specified by decision aid and trait hypothesis conditions. Table 6 Panel B reports that the number of unethical tests specified was consistently greater than the ethical tests specified which explains the test type main effect which supports H5a and H6a. The only exception is in the control condition whereby the relationship reverses in the ethical trait hypothesis condition, therefore explaining the three-way interaction.

Decomposing the interaction by decision aid and focusing solely on the unaided control condition, I conduct a 2 X 2 repeated measures ANOVA (trait hypothesis X test type) with the extent of audit testing as the dependent variable. As Table 7 Panel A indicates, I find a significant test type by trait hypothesis interaction (F=11.01, p=0.002) which provides support for the presence of confirmatory hypothesis testing in the unaided control condition. Specifically, when participants were not provided with a decision aid, they specified more unethical tests in the unethical trait hypothesis condition; however they specified more ethical tests in the ethical trait hypothesis condition.
Examining each of the remaining decision aids separately, I conduct a 2 X 2 repeated measures ANOVA (trait hypothesis X test type) with the extent of audit testing as the dependent variable. As reported in Table 7 Panel B (checklist decision aid condition) and Panel C (schema decision aid condition), the statistically significant test type main effect (F=3.45, p<0.036 and F=22.26, p<0.0001 respectively) indicates that there was a greater number of unethical tests specified as compared to ethical tests which provides unqualified support for H5a and H6a. Furthermore, both decision aids appears to alleviate confirmatory hypothesis testing strategies.

4.3.3 Test of H7a and H8a – Test Specification

Given the interaction contained in Table 6 Panel A, I conduct my tests for H7a and H8a by decomposing the interaction by the trait hypothesis. Focusing on the number of unethical tests reported in Table 6 Panel B as the dependent variable, I conduct a LSD procedure to detect differences in means between decision aid conditions. I find that when the trait hypothesis is unethical, there is no difference in the number of unethical tests specified between DA conditions. However, in the ethical trait hypothesis, the number of unethical tests specified was significantly greater at the 2% level of significance in the schema condition compared to the control condition providing support for H7. I find no support for H8.

Focusing on the number of ethical tests reported in Table 6 Panel B as the dependent variable, I conduct a LSD procedure to detect differences in means between decision aid conditions. I find that when the trait hypothesis was ethical, participants in the schema decision aid condition specified significantly less ethical tests than the control
condition at the 2% level of significance which is consistent with H7.\textsuperscript{60} When the trait hypothesis was unethical, at the 9% level of significance, the checklist condition specified significantly more ethical tests than the control condition which provides marginal support for H8. Refer to Table 6 Panel C for a summary of the results.

4.3.4 Test of H5a and H6a – Test Selection

I retest H5a, H6a, H7a and H8a using the audit tests \textit{selected} from the menu instead of the audit tests \textit{specified}. To provide an overall test of H5a and H6a, I capture the auditors’ testing focus by the ranked number of unethical tests selected divided by the ranked number of ethical tests selected. A ratio value of 1.0 indicates that there was an equal ranked number of unethical and ethical tests selected. A ratio value greater than 1.0 indicates that there was a larger ranked number of unethical tests selected which is consistent with H5a and H6a. On an overall basis, the average ratio is 2.14 (std dev 2.3) which is statistically significantly greater than 1.0 (t\textsubscript{111}=5.32, p<0.0001).\textsuperscript{61}

4.3.5 Test of H7a and H8a – Test Selection

Given that the participants ranked audit procedures from a menu, the selected ranked values of unethical tests are related to the selected ranked values of ethical tests (i.e., the Spearman correlation coefficient is -1.0 by design), and therefore I focus on the ranked number of unethical tests selected. Conducting a 2 X 3 ANOVA (trait hypothesis X decision aid) with the rank selected number of unethical tests as the dependent

\textsuperscript{60} Furthermore, when the trait hypothesis was unethical, participants with the schema decision aid specified significantly less ethical tests than the checklist condition at the 5% level of significance.

\textsuperscript{61} Using the raw number of tests selected rather than the ranked number of tests provides similar results with an average of 1.74 (std dev 1.01) which is significantly greater than 1.0 (t\textsubscript{111}=7.73, p<0.0001).
variable, Table 8 Panel A documents a significant trait hypothesis main effect \( (F=8.67, p=0.004) \) and a marginal decision aid main effect \( (F=2.39, p<0.097) \). Table 8 Panel B documents that the trait hypothesis main effect is due to participants in the unethical trait hypothesis rank selected more unethical based tests as compared to participants in the ethical trait hypothesis. Further examination of the marginal DA main effect utilizing the LSD procedure found at the 7% level of significance, the control condition had a statistically greater level of ranked selected unethical tests than the checklist decision aid consistent with H8, and there is no support for H7.\(^ {62} \) Refer to Table 8 Panel C for a summary of the results.

4.3.6 Test of H5b and H6b – Test Specification

To provide an overall test of H5b and H6b, I capture auditors’ testing focus by the number of competence tests specified divided by the number of incompetence tests specified. A ratio value greater than 1.0 indicates that there was a larger number of competence tests specified which is consistent with H5b and contrary to H6b. A ratio value less than 1.0 indicates that there was a larger number of incompetence tests specified which is consistent with H6b and contrary to H5b. On an overall basis, the average ratio value is 1.96 (std dev 1.4) which is statistically significantly greater than 1.0 \( (t_{80}=6.34, p<0.0001) \).

I conduct a 2 X 3 X 2 repeated measures ANOVA (trait hypothesis X decision aid X test type) with the extent of audit testing as the dependent variable. As reported in Table 9 Panel A, there is a statistically significant test type main effect \( (F=54.21, \)

\(^ {62} \) Using the raw number of tests selected rather than the ranked number of tests results in no statistical difference between decision aid conditions in the ANOVA and LSD tests.
p<0.0001), and all other within-subject effects are not statistically significant. The directionality of means contained in Table 9 Panel B clearly show that the test type main effect is consistent with a H5b and contrary to H6b.

4.3.7 Test of H7b and H8b – Test Specification

Given that the test type by decision aid interaction contained in Table 9 Panel A lacks statistical significance, there is no support for H7b and H8b. Further, conducting an LSD procedure on the mean number of competence tests specified (or number of incompetence tests specified) reported in Table 9 Panel B did not detect statistically significant differences between decision aid conditions. Refer to Table 9 Panel C for a summary of the results.

4.3.8 Test of H5b and H6b – Test Selection

I retest the H5b, H6b, H7b, H8b using the audit tests selected from the menu instead of the audit tests specified. To provide an overall test of H5b and H6b, I capture the auditors’ testing focus by the ranked number of competence tests selected divided by the ranked number of incompetence tests selected. A ratio value greater than 1.0 indicates that there was a greater ranked number of competence tests selected which is consistent with H5b and contrary to H6b. A ratio value less than 1.0 indicates that there was a larger number of ranked incompetence tests selected which is consistent with a

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63 A between subject decision aid marginally significant effect was also found (not tabulated) which suggests that there is a difference between the decision aid conditions with regard to the average number of overall tests specified. However, the focus of the study is on the specific types of tests rather than overall average number of tests.

64 The lack of a test type by trait hypothesis interaction in Table 9 Panel A suggests that confirmatory hypothesis testing strategies are not present.
H6b and contrary to H5b. On an overall basis, the average ratio value is 1.72 (std dev 2.33) which is statistically significantly greater than 1.0 ($t_{113}=3.29$, $p=0.0014$).\(^{65}\)

\[4.3.9\] **Test of H7b and H8b – Test Selection**

As previously noted, given that the participants ranked audit procedures from a menu, the selected ranked values of competence tests are related to the selected ranked values of incompetence tests (i.e., the Spearman correlation coefficient is -1.0 by design), I focus my analysis on the ranked number of competence tests selected. Conducting a 2X 3 ANOVA (trait hypothesis X decision aid) with the rank selected number of competence tests as the dependent variable, Table 10 Panel A documents a statistically significant decision aid main effect ($F=3.17$, $p=0.046$) and a statistically significant trait hypothesis main effect ($F=4.63$, $p=0.034$) with the interaction thereof not statistically significant.

Examining these main effects further, the decision aid main effect indicates that at least one of the decision aid means contained in Table 10 Panel B is different from the others. Examining the decision aid main effect utilizing the LSD procedure found a statistical significant difference in means at the 3% level of significance between the schema condition and the control condition with the directionality supportive of H7 (i.e., the schema decision aid condition had a greater number of competence tests than the control condition), and no other differences were detected at conventional level of significance. Finally, directionality of means suggests that the trait hypothesis main effect is due to participants in the competence trait hypothesis selecting more competence

\[^{65}\] Using the raw number of tests selected rather than the ranked number of tests provides similar results with an average of 1.23 (std dev 0.93) which is statistically significantly greater than 1.0 ($t_{113}=2.67$, $p=0.0086$).
based tests as compared to participants in the incompetence trait hypothesis. Refer to Table 10 Panel C for a summary of results.

### 4.3.10 Supplemental Analysis

Given that this is the first study to examine how auditors test client management’s ethics and competence, debriefing questions captured how auditors perceive the two traits of interest.\(^{66}\) Theoretically, in regard to ethics, an unethical person is less behaviorally restricted, and therefore should be more capable of portraying an ethical person as compared to an ethical person portraying an unethical person. Consistent with the above conjecture, the mean response to the question “to what extent do you think that a person who is very unethical can adequately portray a person who is very ethical” was 7.5 (std dev 2.0) which is statistically significantly greater \((t_{113}=9.03,\text{ one-tailed } p<0.0001)\) than the mean response of 4.8 (std dev 2.5) to the question “to what extent do you think that a person who is very ethical can adequately portray a person who is very unethical”. This provides support for the underlying theoretical framework for the study.

In regard to the competence, a competent person is less behaviorally restricted, and therefore should be more capable of portraying an incompetent person as compared to an incompetent person portraying a competent person. Consistent with the above conjecture, the mean response to the question “to what extent do you think that a person who is very competent can adequately portray a person who is very incompetent” was 5.5 (std dev 2.7) which is statistically significantly greater \((t_{113}=1.81,\text{ one-tailed } p<0.037)\)

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\(^{66}\) Stated differently, these debriefing questions captured whether the auditors schematic associations of the ethicality and competence trait dimensions are “hierarchically restrictive” (Reeder and Brewer 1979) as the theory suggests. Given the audit institutional differences previously noted, there is tension as to how auditors have constructed their schema.
than the mean response of 4.9 (std dev 2.5) to the question “to what extent do you think that a person who is very incompetent can adequately portray a person who is very competent”. This again provides support for study’s theoretical framework.67

4.4 Summary Discussion

This chapter examined how auditors test their hypotheses of two critical components of a client’s CE – client management ethicality and client management competence. In addition, the impact of two different decision aids, specifically a checklist decision aid currently used in practice and an alternative schematic decision aid based on theory, was investigated. Understanding how auditors test the CE is critical as the audit testing will yield the information that will determine the auditors’ reliance on the client’s foundation of internal controls. Furthermore, decision aids that impact the design of audit tests to yield the greatest diagnostic information is critical to audit quality.

Consistent with my theoretical predictions, I find that auditors utilize a diagnostic testing strategy when testing both client management’s ethicality and client management competence. Although the diagnostic testing strategy is consistent with the conservative testing strategy when testing client management ethicality, it is contrary to the conservative testing strategy when testing client management competence. As such, the study provides evidence that auditors overcome their conservative tendencies to conduct the most diagnostic audit tests of the CE. This is an important finding because there has been no research to date that describes or explains how auditors conduct tests of client management ethicality and competence despite the importance of such attributes to financial statement users, and on the

67 The responses to the above schematic association questions were on an 11 point scale ranging from 0 (“Not Likely”) to 10 (“Very Likely”). The schematic association debriefing questions and scales were adapted from Reeder et al. (1982).
audit program. The above finding is robust to alternative measures. Specifically, I find consistent results regardless of whether the audit tests are specified by the auditor or whether the audit tests are selected from a menu of audit tests.

Focusing on the impact of decision aids on auditor testing strategies, consistent with my theoretical predictions, I found evidence that the schematic decision increased the auditor’s extent of diagnostic testing of the CE for both the ethicality trait dimension and the competence trait dimension. Furthermore, the results indicate that consistent with my theoretical predictions, the checklist decision aid decreased the auditors’ extent of diagnostic testing when testing client management ethicality, and was no different from unaided judgments when testing client management competence. This finding is important to audit practice, as it suggests that an effective decision aid for the CE may not be the most commonly used aid in audit practice (e.g., COSO 1992). Rather, given the diversity of the seven CE components, the structure of the most effective CE decision aid may need to be tailored to the underlying construct being evaluated. This is a critical area of future research given the importance of such information on the auditors’ reliance on the client’s foundation of internal controls, and the associations documented between the CE and accrual quality (Doyle et al. 2007a; Hunton et al. 2010).

The conceptual framework for the study and results clearly illustrate that hypothesis testing strategies need not be mutually exclusive. That is, diagnostic and conservative hypothesis testing strategies had identical predictions in one context (i.e., client management ethicality), however had opposite predictions in a second context (i.e., client management competence). By carefully developing the study’s design, I was able to capture and provide insights into the extent of a third type of auditor hypothesis testing strategy – confirmatory
hypothesis testing. Although confirmatory hypothesis testing was found to be present in some contexts (e.g., ethicality trait dimension test specification), the results indicate that the confirmatory strategy may be alleviated by decision aids which are prevalent in audit practice (e.g., Messier 1995), and/or is a subordinate strategy to the primary diagnostic strategy.

There are limitations to the study. First, although my adapted case was extensively pretested and rated understandable and realistic, my study is based on a single case which may limit the generalization of my results. For example, the Chief Financial Officer of interest in the experimental study was not known to the auditor participant or the audit firm. This uncertainty was necessary to examine the strategies auditors utilize in developing their audit tests; however, this choice in design may limit generalization of my results to contexts where the auditor or audit firm is familiar with the CFO. Second, participants in the study were audit seniors from a single public accounting firm and auditors attending an academic program. Although both groups of participants had significant audit experience in CE evaluations, there may be diversity in firm CE training and guidance which may increase variance in the results. Nevertheless, the lack of differences found between the two pools of participants coupled with the statistical significance of the empirical results enhances the generalization of my findings. In addition, both the test specification and test selection paradigms have inherent limitations, however the consistent results between the two approaches provide persuasive evidence of the study’s findings.

Ultimately, my study extends prior literature by providing a clear pattern of results illustrating that auditors utilize a diagnostic hypothesis testing strategy when testing two critical components of the “tone at the top” - client management ethicality and
competence. Hence, auditors overcome their conservative tendencies in order to conduct
diagnostic tests of the CE. My results show that a schematic decision aid may enhance
auditor’s extent of diagnostic testing, whereas a checklist decision aid may either
decrease an auditor’s extent of diagnostic testing or be indistinguishable from unaided
judgments. These findings highlight for future research how decision aid construction
must consider the underlying construct and audit task, which is a considerable
undertaking given the diversity contained in the CE components.
Chapter 5

Conclusions

This final chapter summarizes the two experimental studies contained in chapters 3 and 4 by broadly outlining what has been learned of CE evaluations, and provides concluding remarks.

In order to better understand auditor’s CE judgment and decision making quality, the two studies contained in this thesis examine two different cognitive processes (Bonner 2008). Specifically, I examined how auditors construct their mental representations and test their hypotheses about the strength of a client’s CE. By focusing on two cognitive processes that are instrumental to CE evaluations, the thesis provides insights into how auditors conduct such evaluations and how to improve CE judgment and decision making quality.

The first experiment focuses on the auditor mental representation cognitive process by examining two potential determinants of CE evaluation quality: auditor cue memory and management’s control system framing. Based on output interference theory, I hypothesized that retrieving CE information cues from memory would impact auditor mental representation of the CE. Based on attribute framing, I hypothesized that client management’s frame of the control system would also impact auditor CE mental representation. I predicted that the auditor’s mental representation would mediate the effect of retrieval process and control system frame on CE evaluation judgment. Moreover, given the sequential nature of the audit process, I predicted that the auditor’s CE mental representations would impact subsequent audit judgments such as fraud assessments.

The empirical results show that auditor memory retrieval strategies impact CE mental
representations whereby auditors who recall positive CE information cues prior to negative CE information cues develop a relatively more favorable CE mental representation. Consistent with auditor conservatism, this favorable CE mental representation was caused by a greater proportion of positive CE information items contained in the auditor’s mental representation, and not by differences in negative CE information items. Furthermore, the auditors’ CE mental representation significantly impacted subsequent fraud assessment whereby auditors who had a favorable mental representation assessed the likelihood of fraud as less.

In regard to management framing of the internal control system, I find evidence that partially supports my prediction that, holding CE information cues constant, when the CE is framed positively as encouraging honesty, it is evaluated as being more effective as compared to when it is framed negatively as discouraging dishonesty. The potential impact of framing effects on auditors’ CE effectiveness assessments is important given that my supplemental results show that some subsequent audit judgments were impacted by the auditors’ preliminary assessment of CE effectiveness.

The second experiment focuses on the auditor hypothesis testing cognitive process by examining how auditors test two important CE components, client management ethicality and client management competence. Based on cue-diagnosticity, I predicated that auditors will be more likely to utilize a high diagnostic hypothesis testing strategy when testing client management ethicality and competence whereby the auditor searches for the most informative information. However, based on theories in social cognition, the traits of ethicality and competence are theoretically structured differently which provides a unique audit context in which to disentangle whether auditors utilize a diagnostic or conservative hypothesis testing strategy. Specifically, a diagnostic strategy would provide similar predictions as a
conservative strategy when testing client management ethicality, however the predictions are opposite when testing client management competence. The impact of two types of decision aids, one currently used in practice (i.e., checklist) and one based on theory (i.e., schema), were examined.

The empirical results report that auditors utilize both diagnostic and conservative testing strategies when testing client management ethicality; however, the auditor’s testing strategy is only diagnostic when testing client management competence. Hence, there is evidence to suggest that auditors overcome their conservative tendencies, as documented in the mental representation study, in order to test the CE in a diagnostic fashion. Stated differently, the results indicate that auditors do not necessarily seek negative valence information, but rather seek the most diagnostic information, which may or may not be negative valence information pending the audit task.

In regard to decision aids, I found that when testing client management ethicality and competence, a schematic decision aid was able to increase the auditor’s extent of diagnostic testing. Results provide evidence to support the conjecture that a checklist decision aid decreased the auditor’s extent of diagnostic testing when testing client management ethicality, and was not different from unaided judgments when testing client management competence.

In conclusion, the audit task of evaluating a client’s CE is unique and fundamentally different from the traditional financial statement audit (Marden et al. 1997). Improving auditor CE judgment and decision making quality in this necessary component of the integrated audit is critical to improve audit quality on a company-wide basis. By focusing on the auditor’s mental representation and hypothesis testing
cognitive processes, this thesis provided insights into how auditors conduct such
evaluations and how to improve CE judgment and decision making quality.
References


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Table 1: Mental Representation Experimental Conditions and Cell Sizes

<table>
<thead>
<tr>
<th>Frame</th>
<th>Retrieval Strategy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recall - then +</td>
<td></td>
</tr>
<tr>
<td>Dishonesty</td>
<td>(0)</td>
<td>20</td>
</tr>
<tr>
<td>Honesty</td>
<td>(1)</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>41</td>
</tr>
</tbody>
</table>

Frame is the internal control system frame operationalized at two levels (encouraging honesty versus discouraging dishonesty).

Retrieval strategy is the ordered recall of information cues operationalized at two levels (recall positive before negative versus recall negative before positive).
Table 2: Mental Representation Test of H1a and H2a

Panel A: MANOVA of Mental Representation’s Two Operationalizations Proportional Measure (MRprop) and Net Measure (MRnet)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Wilks’ Lambda</th>
<th>DF</th>
<th>DF error</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame (F) – H1a</td>
<td>0.992</td>
<td>2</td>
<td>75</td>
<td>0.31</td>
<td>0.734</td>
</tr>
<tr>
<td>Retrieval Strategy (R) – H2a</td>
<td>0.777</td>
<td>2</td>
<td>75</td>
<td>10.76</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>F X R</td>
<td>0.994</td>
<td>2</td>
<td>75</td>
<td>0.22</td>
<td>0.801</td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics of Mental Representation Variables

<table>
<thead>
<tr>
<th>LS-Means</th>
<th>Retrieval Strategy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recall - then +</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>Dishonesty (0)</td>
<td>MRprop = 0.421</td>
<td>MRprop = 0.373</td>
</tr>
<tr>
<td></td>
<td>MRnet = -1.400</td>
<td>MRnet = -2.600</td>
</tr>
<tr>
<td>Honesty (1)</td>
<td>MRprop = 0.423</td>
<td>MRprop = 0.392</td>
</tr>
<tr>
<td></td>
<td>MRnet = -1.333</td>
<td>MRnet = -2.246</td>
</tr>
<tr>
<td>Total</td>
<td>MRprop = 0.422</td>
<td>MRprop = 0.344</td>
</tr>
<tr>
<td></td>
<td>MRnet = -1.367</td>
<td>MRnet = -3.479</td>
</tr>
</tbody>
</table>

Panel C: ANOVA of Mental Representation (Proportional Measure: MRprop)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame (F) – H1a</td>
<td>1</td>
<td>0.007</td>
<td>0.007</td>
<td>0.56</td>
<td>0.455</td>
</tr>
<tr>
<td>Retrieval Strategy (R) – H2a</td>
<td>1</td>
<td>0.122</td>
<td>0.122</td>
<td>10.15</td>
<td>0.002</td>
</tr>
<tr>
<td>F X R</td>
<td>1</td>
<td>0.005</td>
<td>0.005</td>
<td>0.43</td>
<td>0.513</td>
</tr>
</tbody>
</table>
Panel D: ANOVA of Mental Representation (Alternative Net Measure: MRnet)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame (F) – H1a</td>
<td>1</td>
<td>2.509</td>
<td>2.509</td>
<td>0.59</td>
<td>0.446</td>
</tr>
<tr>
<td>Retrieval Strategy (R) – H2a</td>
<td>1</td>
<td>89.123</td>
<td>89.123</td>
<td>20.83</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>F X R</td>
<td>1</td>
<td>1.654</td>
<td>1.654</td>
<td>0.39</td>
<td>0.536</td>
</tr>
</tbody>
</table>

Frame is the internal control system frame operationalized at two levels (encouraging honesty versus discouraging dishonesty).

Retrieval strategy is the ordered recall of information cues operationalized at two levels (recall positive before negative versus recall negative before positive).

MRprop is the proportional mental representation defined as (# negative items recalled / (# negative items recalled + # positive items recalled)).

MRnet is the alternative net operationalization of mental representation defined as (# negative items recalled - # positive items recalled).

*all tabulated p-values are two-tailed unless otherwise indicated.
Table 3: Mental Representation Follow Up Test of H1b

Panel A: Follow-up test of H1b - ANOVA of Senior Auditor CE Evaluation Judgment (CE)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame (F)</td>
<td>1</td>
<td>2.676</td>
<td>2.676</td>
<td>0.52</td>
<td>0.473</td>
</tr>
<tr>
<td>Strength Belief (SB)</td>
<td>1</td>
<td>27.044</td>
<td>27.044</td>
<td>5.26</td>
<td>0.025</td>
</tr>
<tr>
<td>F X SB</td>
<td>1</td>
<td>14.454</td>
<td>14.454</td>
<td>2.81</td>
<td>0.098</td>
</tr>
</tbody>
</table>

Panel B: Follow-up test of H1b – Experimental Conditions, Cell Sizes, and Descriptive Statistics of Senior Auditor CE Evaluation Judgment (CE) **

<table>
<thead>
<tr>
<th>LS-Means</th>
<th>Strength Belief</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Honesty (1)</td>
<td></td>
</tr>
<tr>
<td>Dishonesty (0)</td>
<td>n = 27</td>
<td>n = 13</td>
</tr>
<tr>
<td>CE = 1.081</td>
<td>CE = 0.754</td>
<td>CE = 0.918</td>
</tr>
<tr>
<td>Honesty (1)</td>
<td>n = 18</td>
<td>n = 20</td>
</tr>
<tr>
<td>CE = 1.589</td>
<td>CE = -0.520</td>
<td>CE = 0.534</td>
</tr>
<tr>
<td>Total</td>
<td>n = 45</td>
<td>n = 33</td>
</tr>
<tr>
<td>CE = 1.335</td>
<td>CE = 0.117</td>
<td></td>
</tr>
</tbody>
</table>

Frame is the internal control system frame operationalized at two levels (encouraging honesty versus discouraging dishonesty).

Strength belief is the participant’s belief as to which internal control system is stronger operationalized at two levels (encourage honesty versus discourage dishonesty).

CE is the control environment evaluation judgment on a 11-point scale with endpoints of -5 (very ineffective) to +5 (very effective).

*all tabulated p-values are two-tailed unless otherwise indicated.

** 2 participants did not respond to strength belief.
Table 4: Mental Representation Test of H4

Panel A: Test of H4 - ANCOVA of Fraud Assessment (Fraud)

<table>
<thead>
<tr>
<th>R-Square = 0.063</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retrieval Strategy (R)</td>
<td>1</td>
<td>29.344</td>
<td>29.344</td>
<td>4.26</td>
<td>0.043</td>
</tr>
<tr>
<td>MRNet – H4</td>
<td>1</td>
<td>22.592</td>
<td>22.592</td>
<td>3.28</td>
<td>0.074</td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics of Fraud Variables

<table>
<thead>
<tr>
<th>LS-Means</th>
<th>Retrieval Strategy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recall - then +</td>
<td>Fraud</td>
</tr>
<tr>
<td>Recall + then –</td>
<td></td>
<td>Fraud</td>
</tr>
<tr>
<td>(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fraud = 0.047</td>
<td>Fraud = -1.321</td>
</tr>
<tr>
<td></td>
<td>Misapp = 0.037</td>
<td>Misapp = -0.469</td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fraud = -0.637</td>
<td>Fraud = -0.216</td>
</tr>
</tbody>
</table>

Panel C: Descriptive Statistics of Plausibility Assessment (Plaus)

<table>
<thead>
<tr>
<th>LS-Means</th>
<th>Retrieval Strategy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame</td>
<td>Recall - then +</td>
<td>Fraud</td>
</tr>
<tr>
<td></td>
<td>Recall + then –</td>
<td>Fraud</td>
</tr>
<tr>
<td>(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plaus = 1.007</td>
<td>Plaus = 0.540</td>
</tr>
<tr>
<td>Dishonesty (0)</td>
<td></td>
<td>Plaus = 0.773</td>
</tr>
<tr>
<td></td>
<td>Plaus = -0.285</td>
<td>Plaus = 1.440</td>
</tr>
<tr>
<td>Honesty (1)</td>
<td></td>
<td>Plaus = 0.577</td>
</tr>
<tr>
<td></td>
<td>Plaus = 0.361</td>
<td>Plaus = 0.990</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Retrieval strategy* is the ordered recall of information cues operationalized at two levels (recall positive before negative versus recall negative before positive).

*Frame* is the internal control system frame operationalized at two levels (encouraging honesty versus discouraging dishonesty).

*MRnet* is the alternative net operationalization of mental representation defined as (# negative items recalled - # positive items recalled).

*Fraud* is the assessment of the likelihood that the client’s CE will prevent a misstatement arising from fraudulent financial reporting on a 11-point scale with endpoints of -5 (highly unlikely) to +5 (highly likely).

*Misapp* is the assessment of the likelihood that the client’s CE will prevent a misstatement arising from misappropriation of assets on a 11-point scale with endpoints of -5 (highly unlikely) to +5 (highly likely).

*Plaus* is the plausibility assessment of management’s explanation on a 11-point scale with endpoints of -5 (extremely unlikely) to +5 (extremely likely).

*all tabulated p-values are two-tailed unless otherwise indicated.*
Table 5: Hypothesis Testing Experimental Design

Decomposed by Trait Dimension (2 Test Type X 3 Decision Aid)†

<table>
<thead>
<tr>
<th>Trait Dimensions</th>
<th>Ethicality Trait Dimension</th>
<th>Competency Trait Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test Type</td>
<td>Test Type</td>
</tr>
<tr>
<td><strong>Decision Aid</strong></td>
<td>Unethical Test (Non-restricted)</td>
<td>Ethical Test (Restricted)</td>
</tr>
<tr>
<td>Checklist Aid</td>
<td>Cell A</td>
<td>Cell B</td>
</tr>
<tr>
<td>Control Condition</td>
<td>Cell C</td>
<td>Cell D</td>
</tr>
<tr>
<td>Schematic Aid</td>
<td>Cell E</td>
<td>Cell F</td>
</tr>
</tbody>
</table>

Predictions:

**H5a***: Auditors will use more unethical than ethical type tests, therefore test type main effect such that: \( A > B; C > D; E > F \).

**H5b***: Auditors will use more competence than incompetence type tests, therefore test type main effect such that: \( G > H; I > J; K > L \).

**H6a***: Auditors will use more unethical than ethical type tests, therefore test type main effect such that: \( A > B; C > D; E > F \).

**H6b***: Auditors will use more incompetence than competence type tests, therefore test type main effect such that: \( G < H; I < J; K < L \).

**H7a**: A schematic decision aid increases unethical type tests as compared to the unaided control condition, such that: \( E > C; D > F \).

**H7b**: A schematic decision aid increases competence type tests as compared to the unaided control condition, such that: \( K > I; J > L \).

**H8a**: A checklist decision aid decreases unethical type tests as compared to the unaided control condition, such that: \( C > A; B > D \).

**H8b**: A checklist decision aid decreases competence type tests as compared to the unaided control condition, such that: \( I > G; H > J \).
† As previously noted, diagnostic and conservative hypothesis testing strategies do not predict a fixation on the working hypothesis (i.e., confirmatory hypothesis testing), and therefore the between-subject factor Trait Hypothesis main effect and any interaction thereof are not expected to be significant. Hence, the model is expected to collapse as illustrated. Although my study does not focus on confirmatory hypothesis testing, by design, it is able to examine its prevalence as an auditor hypothesis testing strategy.

*Note that although H5a and H6a are supported based on the results from the same statistical tests, H5b and H6b disentangles these effects due to reversal of the predicted directionality.

*Trait Dimension* is a within subject factor operationalized at two levels - ethicality trait dimension and the competence trait dimension.

*Decision Aid (DA)* is a between subject independent variable that manipulates whether the participant received a checklist decision aid (-1), control/unaided (0), or a schematic decision aid (1) when specifying and selecting their audit tests/procedures.

*Test Type (TestType)* is the repeated measure capturing the outcome variable, extent of testing, at two test type points that differ in their test focus - the unethical (non-restricted) aspect of the trait dimension and the ethical (restricted) aspect of the trait dimension.

*Trait Hypothesis (T1hyp)* is a between subject independent variable that manipulates whether the participant was testing the hypothesis that the CFO was unethical (non-restricted hypothesis) (0), or the hypothesis that the CFO was ethical (restricted hypothesis) (1).

*Trait Hypothesis (T2hyp)* is a between subject independent variable that manipulates whether the participant was testing the hypothesis that the CFO was competent (non-restricted hypothesis) (0), or the hypothesis that the CFO was incompetent (restricted hypothesis) (1).

The cell means is the dependent variable, extent of audit testing, which is the number of tests specified (or rank selected) less any generic, non-case specific substantive audit tests.
Table 6: Analysis of H5a, H6a, H7a and H8a Test Specification

Panel A: 2 X 3 X 2 Repeated Measures ANOVA (trait hypothesis X decision aid X test type) with the extent of audit testing as the dependent variable – Number of unethical and ethical tests specified

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestType</td>
<td>1</td>
<td>37.437</td>
<td>37.437</td>
<td>16.48</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>TestType* Decision Aid (DA)</td>
<td>2</td>
<td>15.232</td>
<td>7.616</td>
<td>3.35</td>
<td>0.039</td>
</tr>
<tr>
<td>TestType*Trait Hypothesis (T1hyp)</td>
<td>1</td>
<td>7.853</td>
<td>7.853</td>
<td>3.46</td>
<td>0.066</td>
</tr>
<tr>
<td>TestType<em>DA</em>T1hyp</td>
<td>2</td>
<td>21.798</td>
<td>10.899</td>
<td>4.80</td>
<td>0.010</td>
</tr>
<tr>
<td>Error (TestType)</td>
<td>109</td>
<td>247.635</td>
<td>2.272</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics – Means (standard deviations) of unethical and ethical tests specified

<table>
<thead>
<tr>
<th>Trait Hypothesis (T1hyp)</th>
<th>Decision Aid (DA)</th>
<th>Unethical Test (Non-restricted)</th>
<th>Ethical Test (Restricted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unethical hypothesis (T1hyp=0)</td>
<td>Checklist (-1)</td>
<td>2.67 (1.37) Cell A</td>
<td>2.33 (1.24) Cell B</td>
</tr>
<tr>
<td></td>
<td>Control Condition (0)</td>
<td>3.15 (1.60) Cell C</td>
<td>1.75 (0.91) Cell D</td>
</tr>
<tr>
<td></td>
<td>Schematic Aid (1)</td>
<td>3.45 (1.36) Cell E</td>
<td>1.65 (0.93) Cell F</td>
</tr>
<tr>
<td>Ethical hypothesis (T1hyp=1)</td>
<td>Checklist (-1)</td>
<td>3.28 (1.27) Cell A</td>
<td>2.22 (0.94) Cell B</td>
</tr>
<tr>
<td></td>
<td>Control Condition (0)</td>
<td>2.00 (1.38) Cell C</td>
<td>2.90 (1.17) Cell D</td>
</tr>
<tr>
<td></td>
<td>Schematic Aid (1)</td>
<td>3.11 (1.59) Cell E</td>
<td>1.95 (1.27) Cell F</td>
</tr>
</tbody>
</table>
### Panel C: Summary of H5a, H6a, H7a, H8a Test Specification Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Prediction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H5a</strong></td>
<td>A &gt; B</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>C &gt; D</td>
<td>Partially supported</td>
</tr>
<tr>
<td></td>
<td>E &gt; F</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H6a</strong></td>
<td>A &gt; B</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>C &gt; D</td>
<td>Partially supported</td>
</tr>
<tr>
<td></td>
<td>E &gt; F</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H7a</strong></td>
<td>E &gt; C</td>
<td>Partially supported</td>
</tr>
<tr>
<td></td>
<td>D &gt; F</td>
<td>Partially supported</td>
</tr>
<tr>
<td><strong>H8a</strong></td>
<td>C &gt; A</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>B &gt; D</td>
<td>Partially supported</td>
</tr>
</tbody>
</table>

*all tabulated p-values are two-tailed unless otherwise indicated.

See Table 5 for variable definitions.
Table 7: Analysis of H5a and H6a Test Specification Interaction Decomposition

Panel A: No Decision Aid Condition 2 X 2 Repeated Measures ANOVA (trait hypothesis X test type) with the extent of audit testing as the dependent variable - Number of unethical and ethical tests specified

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestType</td>
<td>1</td>
<td>1.250</td>
<td>1.25</td>
<td>0.52</td>
<td>0.4751</td>
</tr>
<tr>
<td>TestType*Trait Hypothesis (T1hyp)</td>
<td>1</td>
<td>26.450</td>
<td>26.45</td>
<td>11.01</td>
<td>0.0020</td>
</tr>
<tr>
<td>Error (TestType)</td>
<td>38</td>
<td>91.300</td>
<td>2.403</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Checklist Decision Aid Condition 2 X 2 Repeated Measures ANOVA (trait hypothesis X test type) with the extent of audit testing as the dependent variable - Number of unethical and ethical tests specified

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestType</td>
<td>1</td>
<td>8.681</td>
<td>8.681</td>
<td>3.45</td>
<td>0.0359†</td>
</tr>
<tr>
<td>TestType*Trait Hypothesis (T1hyp)</td>
<td>1</td>
<td>2.347</td>
<td>2.347</td>
<td>0.93</td>
<td>0.3407</td>
</tr>
<tr>
<td>Error (TestType)</td>
<td>34</td>
<td>85.472</td>
<td>2.514</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel C: Schema Decision Aid Condition 2 X 2 Repeated Measures ANOVA (trait hypothesis X test type) with the extent of audit testing as the dependent variable - Number of unethical and ethical tests specified

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestType</td>
<td>1</td>
<td>42.624</td>
<td>42.624</td>
<td>22.26</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>TestType*Trait Hypothesis (T1hyp)</td>
<td>1</td>
<td>2.009</td>
<td>2.009</td>
<td>1.05</td>
<td>0.3124</td>
</tr>
<tr>
<td>Error (TestType)</td>
<td>37</td>
<td>70.863</td>
<td>1.915</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*all tabulated p-values are two-tailed unless otherwise indicated.
† One-tailed p-value in predicted direction.

See Table 5 for variable definitions.
Table 8: Analysis of H5a, H6a, H7a and H8a Test Selection

Panel A: 2 X 3 ANOVA (trait hypothesis X decision aid) with the ranked number of unethical tests selected as the dependent variable

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Aid (DA)</td>
<td>2</td>
<td>15.997</td>
<td>7.999</td>
<td>2.39</td>
<td>0.0965</td>
</tr>
<tr>
<td>Trait Hypothesis (T1hyp)</td>
<td>1</td>
<td>29.006</td>
<td>29.006</td>
<td>8.67</td>
<td>0.0040</td>
</tr>
<tr>
<td>DA * T1hyp</td>
<td>2</td>
<td>1.865</td>
<td>0.932</td>
<td>0.28</td>
<td>0.7574</td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics - Means (standard deviations) of the ranked number of unethical tests selected

<table>
<thead>
<tr>
<th></th>
<th>Trait Hypothesis (T1hyp)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unethical hypothesis (T1hyp=0)</td>
<td>Ethical hypothesis (T1hyp=1)</td>
</tr>
<tr>
<td>Checklist (-1)</td>
<td>RankU = 6.17 (2.09)</td>
<td>RankU = 5.00 (1.68)</td>
</tr>
<tr>
<td>Control Condition (0)</td>
<td>RankU = 6.70 (2.00)</td>
<td>RankU = 6.05 (1.61)</td>
</tr>
<tr>
<td>Schematic Aid (1)</td>
<td>RankU = 6.20 (1.82)</td>
<td>RankU = 5.00 (1.73)</td>
</tr>
<tr>
<td>Total</td>
<td>6.36</td>
<td>5.35</td>
</tr>
</tbody>
</table>

See Table 5 for variable definitions.

*RankU* is the ranked number of unethical tests selected. The participant ranked 4 tests, and the highest priority test received a weight of 4, their second highest priority test received a weight of 3, etc. This weighting scheme is consistent with prior research (McMillan and White 1993).

Panel C: Summary of H5a, H6a, H7a, H8a Test Selection Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Prediction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5a</td>
<td>Ratio &gt; 1</td>
<td>Supported</td>
</tr>
<tr>
<td>H6a</td>
<td>Ratio &gt; 1</td>
<td>Supported</td>
</tr>
<tr>
<td>H7a</td>
<td>5.60 &gt; 6.38 (from Panel B)</td>
<td>Not supported</td>
</tr>
<tr>
<td>H8a</td>
<td>6.38 &gt; 5.58 (from Panel B)</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Table 9: Analysis of H5b, H6b, H7b and H8b Test Specification

Panel A: 2 X 3 X 2 Repeated Measures ANOVA (trait hypothesis X decision aid X test type) with the extent of audit testing as the dependent variable – Number of competence and incompetence tests specified

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestType</td>
<td>1</td>
<td>134.463</td>
<td>134.463</td>
<td>54.21</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>TestType*Decision Aid (DA)</td>
<td>2</td>
<td>0.732</td>
<td>0.366</td>
<td>0.15</td>
<td>0.863</td>
</tr>
<tr>
<td>TestType*Trait Hypothesis (T2hyp)</td>
<td>1</td>
<td>1.382</td>
<td>1.382</td>
<td>0.56</td>
<td>0.457</td>
</tr>
<tr>
<td>TestType<em>DA</em>T2hyp</td>
<td>2</td>
<td>2.960</td>
<td>1.480</td>
<td>0.60</td>
<td>0.553</td>
</tr>
<tr>
<td>Error (TestType)</td>
<td>105</td>
<td>260.448</td>
<td>2.480</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics - Means (standard deviations) of competence and incompetence tests specified

<table>
<thead>
<tr>
<th>Testing Type (TestType)</th>
<th>Decision Aid (DA)</th>
<th>Competence Test (Non-restricted)</th>
<th>Incompetence Test (Restricted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checklist (-1)</td>
<td></td>
<td>3.09 (1.09)</td>
<td>1.63 (1.21)</td>
</tr>
<tr>
<td>Control Condition (0)</td>
<td></td>
<td>2.78 (1.39)</td>
<td>1.28 (1.20)</td>
</tr>
<tr>
<td>Schematic Aid (1)</td>
<td></td>
<td>3.11 (1.33)</td>
<td>1.36 (1.29)</td>
</tr>
<tr>
<td>Cell G</td>
<td></td>
<td>Cell I</td>
<td>Cell J</td>
</tr>
<tr>
<td>Cell I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell L</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Panel C: Summary of H5b, H6b, H7b, H8b Test Specification Results**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Prediction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H5b</strong></td>
<td>G &gt; H</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>I &gt; J</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>K &gt; L</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H6b</strong></td>
<td>G &lt; H</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>I &lt; J</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>K &lt; L</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>H7b</strong></td>
<td>K &gt; I</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>J &gt; L</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>H8b</strong></td>
<td>I &gt; G</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>H &gt; J</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

*all tabulated p-values are two-tailed unless otherwise indicated.*

See Table 5 for variable definitions.
Table 10: Analysis of H5b, H6b, H7b and H8b Test Selection

Panel A: 2 X 3 ANOVA (trait hypothesis X decision aid) with the ranked number of competence tests selected as the dependent variable

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>MS</th>
<th>F-Value</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Aid (DA)</td>
<td>2</td>
<td>29.286</td>
<td>14.643</td>
<td>3.17</td>
<td>0.046</td>
</tr>
<tr>
<td>Trait Hypothesis (T2hyp)</td>
<td>1</td>
<td>21.421</td>
<td>21.421</td>
<td>4.63</td>
<td>0.034</td>
</tr>
<tr>
<td>DA*T2hyp</td>
<td>2</td>
<td>21.724</td>
<td>10.862</td>
<td>2.35</td>
<td>0.100</td>
</tr>
</tbody>
</table>

Panel B: Descriptive Statistics - Means (standard deviations) of the ranked number of competence tests selected

<table>
<thead>
<tr>
<th></th>
<th>Competence hypothesis (T2hyp=0)</th>
<th>Incompetence hypothesis (T2hyp=1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checklist (-1)</td>
<td>RankC = 5.39 (1.85)</td>
<td>RankC = 4.83 (2.71)</td>
<td>5.11</td>
</tr>
<tr>
<td>Control Condition (0)</td>
<td>RankC = 4.15 (1.66)</td>
<td>RankC = 4.15 (2.08)</td>
<td>4.15</td>
</tr>
<tr>
<td>Schematic Aid (1)</td>
<td>RankC = 6.30 (1.95)</td>
<td>RankC = 4.26 (2.51)</td>
<td>5.28</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>5.28</td>
</tr>
</tbody>
</table>

*all tabulated p-values are two-tailed unless otherwise indicated.

See Table 5 for variable definitions.

*RankC is the ranked number of competence tests selected. The participant ranked 4 tests, and the highest priority test received a weight of 4, their second highest priority test received a weight of 3, etc. This weighting scheme is consistent with prior research (McMillan and White 1993).

Panel C: Summary of H5b, H6b, H7b, H8b Test Selection Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Prediction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5b</td>
<td>Ratio &gt; 1</td>
<td>Supported</td>
</tr>
<tr>
<td>H6b</td>
<td>Ratio &lt; 1</td>
<td>Not supported</td>
</tr>
<tr>
<td>H7b</td>
<td>5.28 &gt; 4.15 (from Panel B)</td>
<td>Supported</td>
</tr>
<tr>
<td>H8b</td>
<td>4.15 &gt; 5.11 (from Panel B)</td>
<td>Not supported</td>
</tr>
</tbody>
</table>
Figure 1: Honesty Frame Illustrative Example

The following excerpts are extracted from Lions Gate Entertainment (LGE) Corporation’s Code of Business Conduct and Ethics (the Code) which is a publicly available document. LGE is a Canadian cross-listed company with shares traded on both the Toronto Stock Exchange and the New York Stock Exchange with annual revenues in 2006 exceeding $950,000,000 USD and a total asset balance exceeding $1,000,000,000 USD. Interestingly, in the year the Code was filed (i.e., the Code was filed on June 14, 2006), LGE received an unqualified internal control over financial reporting audit opinion. However, in the year preceding the release of the Code, LGE had an adverse internal control over financial reporting audit opinion.

Page 1 of 15:

This Code of Business Conduct and Ethics (the “Code”) articulates policies and business practices that apply throughout Lions Gate Entertainment Corp., including all divisions and subsidiaries (the “Company”). All directors, officers and employees (“Covered Persons”) must ensure that the highest level of honesty and integrity is maintained in the exercise of their responsibilities on behalf of the Company.

Page 1 of 15:

In carrying out their duties, each Covered Person must:

- Act with honesty and integrity, including the ethical handling of any actual or apparent conflict of interest between personal and professional relationships;

Page 2 of 15:

- Promote ethical and honest behavior in the workplace.

Page 10 of 15:

**F. FINANCIAL MATTERS; HONESTY**

We are a publicly owned company. As such, we rely on the public securities markets for capital to fund our activities. Public investors rely upon the quality and integrity of our financial reports and press releases. Accordingly, it is imperative that the Company maintain accurate books and records and report its financial results and condition accurately. You are expected to do everything within your power to ensure that Company financial and non-financial information is maintained and reported accurately and properly.
Figure 2: Causes and Consequences of CE Mental Representations

Panel A: Theoretical Framework

Panel B: Experimental Results
Figure 3: Checklist Decision Aids

Panel A: Checklist decision aid for client management ethicality

EVALUATION TOOLS (A) – Firm guidance to aid in audit test/procedure design to address the problem of uncertainty regarding CFO ethicality:

<table>
<thead>
<tr>
<th>Points of focus for the possibilities that the CFO is ethical or unethical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Existence and implementation of codes of conduct and other policies regarding acceptable business practice, conflict of interest, or expected standards of ethical and moral behaviour.</td>
</tr>
<tr>
<td>2. Establishment of the “tone at the top” – including explicit moral guidance about what is right and appropriate – and extent of its communication throughout the organization.</td>
</tr>
<tr>
<td>3. Whether management conducts business on a high ethical plane, and insists that others do so (e.g., employees, suppliers, customers, investors, creditors, insurers, competitors, and auditors, etc.).</td>
</tr>
<tr>
<td>4. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or violations of the code of conduct. Extent to which remedial action/discipline is communicated or otherwise becomes known throughout the entity.</td>
</tr>
<tr>
<td>5. Management's willingness to override established controls or intervene in the financial reporting process.</td>
</tr>
<tr>
<td>6. Pressure to meet unrealistic performance targets – particularly for short term results – and extent to which compensation is based on achieving those unrealistic performance targets.</td>
</tr>
<tr>
<td>7. Other</td>
</tr>
</tbody>
</table>

Panel B: Checklist decision aid for client management competence

EVALUATION TOOLS (B) – Firm guidance to aid in audit test/procedure design to address the problem of uncertainty regarding CFO ability:

<table>
<thead>
<tr>
<th>Points of focus for the possibilities that the CFO is competent or incompetent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Formal or informal job descriptions or other means to clearly define the tasks that comprise the CFO's job.</td>
</tr>
<tr>
<td>2. Analyses of the CFO's knowledge and skills needed to perform his/her job responsibilities adequately.</td>
</tr>
<tr>
<td>3. Extent to which policies and procedures for hiring, training, promoting and compensating the CFO are in place.</td>
</tr>
<tr>
<td>4. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or failures to carry out assigned duties.</td>
</tr>
<tr>
<td>5. Adequacy of CFO candidate background checks, particularly with regard to prior actions or activities considered to be unacceptable by the entity.</td>
</tr>
<tr>
<td>6. Adequacy of information-gathering techniques to capture inadequate CFO job performance or inappropriate behaviour, and the extent to which these infractions impact CFO dismissals, retention, etc.</td>
</tr>
<tr>
<td>7. Other</td>
</tr>
</tbody>
</table>
Figure 4: Schema Decision Aids

Panel A: Schema decision aid for client management ethicality

EVALUATION TOOLS (A) – Firm guidance to aid in audit test/procedure design:

Problem: Uncertainty regarding CFO ethicality

Possibilities:
- CUU is Ethical
- CUU is Unethical

Points of Focus:
1. Existence and implementation of codes of conduct and other policies regarding acceptable business practice, conflict of interest, or expected standards of ethical and moral behaviour.
2. Establishment of the “tone at the top” – including explicit moral guidance about what is right and appropriate and extent of its communication throughout the organization.
3. Whether management conducts business on a high ethical plane, and insists that others do so (e.g., employees, suppliers, customers, investors, creditors, insurers, competitors, and auditors, etc.).
4. Other

1. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or violations of the code of conduct. Extent to which remedial action/discipline is communicated or otherwise becomes known throughout the entity.
2. Management’s willingness to override established controls or intervene in the financial reporting process.
3. Pressure to meet unrealistic performance targets particularly for short term results – and extent to which compensation is based on achieving those unrealistic performance targets.
4. Other
Panel B: Schema decision aid for client management competence

EVALUATION TOOLS (B) – Firm guidance to aid in audit test/procedure design:

Problem:
Uncertainty regarding CFO ability

Possibilities:

- CFO is Competent
- CFO is Incompetent

Points of Focus:

1. Formal or informal job descriptions or other means to clearly define the tasks that comprise the CFO’s job.
2. Analyses of the CFO’s knowledge and skills needed to perform his/her job responsibilities adequately.
3. Extent to which policies and procedures for hiring, training, promoting and compensating the CFO are in place.
4. Other

1. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or failures to carry out assigned duties.
2. Adequacy of CFO candidate background checks, particularly with regard to prior actions or activities considered to be unacceptable by the entity.
3. Adequacy of information gathering techniques to capture inadequate CFO job performance or inappropriate behavior, and the extent to which these infractions impact CFO dismissals, retention, etc.
4. Other
**Figure 5: Audit Test Menus**

**Panel A: Audit test menu for client management ethically**

<table>
<thead>
<tr>
<th>RANK</th>
<th><strong>AUDIT TEST OR PROCEDURE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Request that each member of the board of directors provide to the auditor, on a confidential basis, character reference letters and/or letters of reference for Dan Carroll, with specifics as to how he has exemplified ethical values when carrying out his responsibilities.</td>
</tr>
<tr>
<td></td>
<td>Conduct a confidential electronic workplace survey among the accounting staff and select employees to assess whether any issues have arisen such as pressure to meet performance targets, unrealistic expectations, or any other problems.</td>
</tr>
<tr>
<td></td>
<td>Require that MIT issue a press release to external stakeholders (e.g., creditors) and internal employees requesting confidential feedback on the prior business practices of Dan Carroll to be sent directly to the auditor.</td>
</tr>
<tr>
<td></td>
<td>Confirmation to the professional institutes as to whether there are any allegations of unethical behaviour/complaints historically or under investigation for Dan Carroll. Also, confirmation to all universities to ascertain if Dan was ever involved in academic misconduct.</td>
</tr>
<tr>
<td></td>
<td>Confirmations to all professional institutes to verify that Dan Carroll’s professional memberships are active and in good standing. Also, confirmation to all universities to ensure that all degrees recorded on Dan’s resume have been conferred.</td>
</tr>
<tr>
<td></td>
<td>With the assistance of the audit firm’s forensic group which is comprised of Investigative and Forensic Accounting (IFA) specialists, conduct an interview on Dan Carroll and administer psychometric tests designed to identify potential unethical propensities or behaviour.</td>
</tr>
<tr>
<td></td>
<td>Inspect Dan Carroll’s annual declaration of conformity with MIT’s code of ethical conduct, and verify Dan’s completion of MIT’s mandatory ethics training.</td>
</tr>
<tr>
<td></td>
<td>Inquire with MIT’s Ombudsman, who is responsible for MIT’s whistle-blowing procedures, to ascertain if any issues, concerns, or red flags have arisen regarding Dan Carroll’s ethics, especially as it relates to potentially fraudulent financial reporting.</td>
</tr>
</tbody>
</table>
Panel B: Audit test menu for client management competence

<table>
<thead>
<tr>
<th>RANK</th>
<th>AUDIT TEST OR PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conduct a confidential electronic workplace survey among the accounting staff and select employees to assess whether there are signs or concerns regarding Dan Carroll’s inability to carry out his assigned duties with specific questions focusing on financial reporting and internal control over financial reporting incompetence.</td>
</tr>
<tr>
<td></td>
<td>Confirmation to the professional institutes for Dan Carroll’s annual declaration of compliance with the mandated continuing education requirements. Inspect receipts and confirmations to ensure that the professional development courses Dan Carroll has taken are value added and complimentary to his CFO role.</td>
</tr>
<tr>
<td></td>
<td>Confirmation to the professional institute as to whether there are any allegations of incompetent behaviour historically or under investigation for Dan Carroll especially as it relates to his new CFO responsibilities. Inspect MTI’s human resource departments’ due diligence documentation on Dan Carroll verifying he possessed the necessary credentials and surpassed benchmarks of financial reporting and internal control over financial reporting competency for the position of CFO.</td>
</tr>
<tr>
<td></td>
<td>Senior audit team members (e.g., engagement partner) interview Dan Carroll to ascertain whether the issues noted to date were a result of the CFO misunderstanding accounting principles and/or control procedures. Obtain and inspect current schedules, for example R&amp;D capitalizations, for conceptual errors and/or internal control deficiencies.</td>
</tr>
<tr>
<td></td>
<td>Reperform (or perform) background and reference checks on Dan Carroll’s expertise in financial reporting and internal control over financial reporting.</td>
</tr>
<tr>
<td></td>
<td>Have a formal confidential meeting with Linda Johnstone, the Director of Internal Audit, to assess whether any issues, concerns or red flags have arisen in her internal investigations as to the competence of Dan Carroll in his financial reporting and internal control over financial reporting duties. If red flags are present, ascertain what subsequent steps have been taken.</td>
</tr>
<tr>
<td></td>
<td>Inquire with the audit committee, especially Reginald Coxwell and Duncan Brown, as to how they have monitored and/or improved the competence of Dan Carroll in performing his CFO responsibilities, and their satisfaction to date. Inspect related documentation such as performance evaluations.</td>
</tr>
</tbody>
</table>
Appendix A: Experimental Instruments

Panel A: Mental Representation Experimental Instruments
(Version: Discouraging Dishonesty/Recall Positive Before Negative)

DIRECTIONS

Assume that you are assigned to the audit of McCrae Technologies Inc., and that you are participating in the preliminary planning phases. In this study, you will be asked to make a series of judgments relating to the design of the audit program. Consistent with internal control frameworks and audit standards, these judgments will involve developing an understanding of the control environment and subsequent analysis.

You are provided with two envelopes. The first envelope contains five booklets, and the second envelope is empty. As you proceed through the study, you are to remove the sequentially numbered booklets from the first envelope and then insert them when completed into the second envelope.

Booklet #1 contains the “Company Background Information” and “Control Environment Information”. Booklet #2 contains the “Audit Planning Phase 1”, Booklet #3 contains the “Audit Planning Phase 2”, and Booklet #4 contains “Audit Planning Phase 3” information. Booklet #5 is the final booklet where you document your judgments regarding the audit of McCrae Technologies Inc., as well as demographic information and general concluding questions. As you complete each booklet, you will place it in the second envelope and will not be able to return to it.

It is important that you proceed through the booklets in order, follow the instructions contained therein, and answer the questions in the order they are asked. Please do not change any answer – hindsight may invalidate the results. Please do not inspect any of the future booklets or reference any of the prior booklets once they are completed and placed in the envelope. No reference material/tools is allowed.

All completed materials will be kept completely confidential. The only identifying marks on the materials are for the researchers to ensure that all the above stated booklets belong to a single participant. The marks do not identify your identity as a participant.

Booklets 1-4 have time limits which were developed based on previous participants. These time limits provide you with adequate time to complete the materials – they are NOT designed to rush you! Their purpose is to ensure all participants spend equal times on each booklet. Once the time has expired, you will be notified to move onto the next booklet. Do not proceed until instructed to do so.

You will have 15 minutes to complete Booklet #1.

You will have 3 minutes to complete Booklet #2.

You will have 5 minutes to complete Booklet #3.

You will have 5 minutes to complete Booklet #4.

You have no time limit to complete Booklet #5.

Once complete, please seal the envelope containing the five completed booklets and submit to the researcher.

THANK YOU!
After 15 minutes from the start time, the researcher will indicate for you to place Booklet #1 in the empty envelope provided (the “completed material envelope”).

You will not be able to access this material again.

Please do not proceed onto Booklet #2 until the researcher has instructed you to do so.
Company Background: McCrae Technologies Inc.

McCrae Technologies Inc. is an international manufacturer of precision, high-technology instruments, with manufacturing operations both in and outside of Canada. Its products are sold in over fifty countries, including Canada and the United States. McCrae Technologies is a worldwide leader and pioneer in developing innovative systems and technologies in its areas of expertise. McCrae’s stock is publicly traded on both the Toronto Stock Exchange and New York Stock Exchange.

For the past seven years, McCrae’s net income had been positive and consistently increasing. Sales have steadily increased with expectations that the trend will continue for fiscal year 2008. Its market niche is in a rapidly growing area and new markets and new products should continue to provide significant sales growth. However, McCrae’s markets are becoming increasingly competitive. McCrae’s advantage is its established record of innovation and leadership in each of the areas in which it competes.

Management believes its technical staff is highly skilled, but many of its competitors have substantially greater financial resources and larger technical staffs at their disposal. There can be no assurance that such competitors will not direct substantial efforts and resources toward the development and marketing of products competitive with those of McCrae. Management believes its ability to maintain its competitive advantage will continue to depend on a combination of its market leadership, its highly-skilled technical staff, its reputation, its patents, its unpatented propriety knowledge and experience, and the quality, safety, and cost effectiveness of its products.

McCrae operates research and development centres in Canada, the United States, Europe, and Asia. Total research and development costs for 2008 are projected to be $16.3 million, up from $12.9 million in 2007 and $10.9 million in 2006. Management believes customer collaboration is an important part of their technical strength and competitive advantage and has built close working relationships with a significant number of professionals using their instruments. This network of experts helps McCrae with ideas for new products, ways to improve existing products, and new applications for existing products. They also provide McCrae with test sites and objective evaluations regarding technical and performance issues.

McCrae holds patents in Canada, the United States, and abroad on certain of its instruments. Management considers these patents to be important, but not indispensable, to its business. To maintain its competitive position, management relies to a greater degree on the technical expertise and know-how of its personnel than on it patents. Management pursues an active and formal program of invention disclosure and patent application in Canada, the United States, and abroad. McCrae also owns various trademarks which have been registered in Canada, the United States, and certain other countries.

McCrae has several related and wholly owned subsidiaries and has over 1,100 employees on its payroll. Approximate breakdowns of employee assignment by function are: 48% manufacturing, 17% sales and marketing, 15% general and administrative, 11% quality control and field service, and 9% research and development. McCrae considers it employee relations to be satisfactory.
Your firm has audited McCrae for the past 3 years and has again been hired to perform an integrated audit of their financial statements and internal controls over financial reporting for the fiscal year ended December 31, 2008. Your firm maintains a good working relationship with McCrae and has found management and employees to be generally cooperative. You have been assigned to this audit. You have been asked to develop an understanding of McCrae’s control environment and to aid in the early stages of the planning process by completing the tasks provided in the subsequent booklets. You start by gathering evidence on McCrae’s control environment which is presented in the “Control Environment Information” section which begins in the next section of this booklet.

Control Environment Information: McCrae Technologies Inc.

McCrae management assesses its internal control system based on the framework established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), which has been incorporated into various auditing standards such as CICA 5141, ISA 315, SAS 109, and noted in PCAOB No.5.

Briefly, the control environment sets the tone of an organization, influencing the control consciousness of its people. It is the foundation for all other components of internal control, providing discipline and structure. Control environment factors include the integrity, ethical values and competence of the entity’s people; management’s philosophy and operating style; the way management assigns authority and responsibility, and organizes and develops its people; and the attention and direction provided by the board of directors.

Internal control frameworks such as COSO provide guidance as to what factors comprise the control environment. However, it is management’s responsibility to implement and tailor specific programs and controls to the risks management has identified. Given your audit firm’s 3 year history with McCrae, the prior years’ audit working papers indicate that McCrae’s management has designed the control system with the objective of discouraging dishonesty in the workplace by establishing programs and controls that deter and detect employee dishonesty in order to improve financial reporting reliability.

In order to develop an understanding of McCrae’s current conditions in preparation for the year-end integrated audit, and in order to collect evidence of the design and operation of the control environment at McCrae, you schedule a meeting with McCrae’s controller. Your meeting is brief as the controller had a subsequent management meeting. Fortunately, given the controller’s prior experience with the COSO framework, she was able to provide you with her prepared notes of the control environment listing numerous items that are relevant for your audit. This list of information is contained in the following pages entitled “Controller’s Notes on the Control Environment”.

Please ensure you have an adequate understanding of the control environment information as you will later be asked questions regarding McCrae’s control environment and will not have the material contained in Booklet #1, such as the controller’s notes on the control environment, as a reference.
Controller’s Notes on the Control Environment: McCrae Technologies Inc.

Controller Comments: “Ultimately, the internal control system has been designed with the objective of deterring and detecting dishonesty in the workplace. Our philosophy is that the effectiveness of controls cannot rise above the integrity and ethical values of the people who create, administer, and monitor them. By firing and disciplining people who are dishonest, and structuring training to discourage employees from being dishonest, we have established a corporate culture based on a strong set of core values which are clearly communicated and demonstrated by management. Our rationale is that by designing our internal control systems to deter and detect dishonesty, we are striving to establish a positive work environment and high quality financial reporting.”

The controller’s prepared notes regarding specific control environment information items is as follows:

| The company has a comprehensive code of conduct that outlines workplace behavioural standards (e.g., conflict of interest, ethics, etc.). |
| All employees are required to sign a code of conduct. |
| We do not require employees to sign the code of conduct on an annual basis. |
| Our management team strives for a high degree of integrity. |
| Feedback from our employees indicates that they do not feel pressure to cut corners. |
| We treat our employees very well (e.g., an on-site day care center is provided by the company). |
| We have good relations with suppliers and customers. |
| To our knowledge there have been no recent violations of behavioural standards. |
| In the past we have responded to behavioural standard violations in an appropriate manner. |
| Confidentiality concerns have restricted our communication of disciplinary actions among employees. |
| Given that everyone is expected to follow company policies, manager override of established controls is not explicitly prohibited. |
| Managers are expected to follow company policies, so we do not have a formal process for documenting/investigating manager override of policies. |
| The company minimizes any incentives that would test people’s ethical values. |
| Compensation is in line with industry standards. |
| The board of directors is active and exercises oversight capacity. |

(continued on next page)
We attempt to ensure appropriate employee supervision exists.

The technical nature of our business requires hiring decision to consider relevant expertise and knowledge in all departments.

We believe that our employees are highly skilled and competent.

Audit, governance, compensation, and stock option committees exist.

Management is not on the audit, governance and compensation committees (i.e., these committees are comprised of independent board members).

The board meets regularly and all members participate actively.

The audit committee can discuss issues with the chief accounting officer and internal and external auditors on a confidential basis (i.e., management not present).

A charter for each of the Board of Director committees exists.

Directors receive sufficient information before meetings.

The compensation committee gives final approval to all management incentive plans.

Although the board informally ensures an appropriate “tone at the top”, there is no formal process established.

We tend to be risk-averse in our business practices.

We carefully consider the potential risks and benefits of a venture before action is taken.

Only planned and anticipated changes in key personnel occurred during the year for which we had succession plans in place (i.e., no unexpected key staff departures).

Our revenue recognition policies are conservative and not aggressive with respect to net income.

All financial reports are reviewed and approved by the controller, CFO, and CEO before release.

A control system to protect valuable assets exists.

Under rare circumstances a lapse in employee oversight may occur in the asset control system.

Several group management meetings were held during the year.

We believe the organizational structure is appropriate given the nature of the entity’s operations.

We expect employees to follow our documented information flow policies, but monitoring is infrequent.

(continued on next page)
Written relationships are clear and appropriate.

Our organizational structure has developed as our company has grown; however we only informally assess the organizational structure.

Overtime is not excessive.

There have been some instances where supervisors fulfill dual responsibilities.

Responsibility and delegation of authority are assigned in a formal, written manner.

We believe that the company has an adequate workforce in number and experience to carry out its mission.

Senior management has a decentralized approach and is not involved in day-to-day activities; area supervisors are assigned responsibility for these activities.

There are clear hiring and promotion policies.

Performance evaluations are conducted at least annually.

Feedback from supervisors to management indicates that non-adherence to established policies will result in poor performance reviews or, in extreme cases, termination.

Feedback from employees to management indicates that employees are aware of the consequences of not fulfilling their responsibilities.

Policies exist for the human resource department to investigate prior employment history in hiring decisions.

We are aware that time constraints in the human resource department often prevent careful scrutiny of job candidate’s prior history.

The documentation for the performance review process clearly indicates that adherence to behavioural criteria is considered in the promotion process.

After 15 minutes from the start time, the researcher will indicate for you to place Booklet #1 in the empty envelope provided (the “completed material envelope”).

You will not be able to access this material again.

Please do not proceed onto Booklet #2 until the researcher has instructed you to do so.
After 3 minutes from the start time, the researcher will indicate for you to place Booklet #2 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #3 until the researcher has instructed you to do so.
1) Did you have sufficient time to read Booklet #1? Please check one:

[ ] There was too much time allowed to read booklet #1. I would have wanted ___ less minutes.
[ ] The time to read Booklet #1 was appropriate.
[ ] There was not enough time allowed to read booklet #1. I would have wanted ___ more minutes.

2) Suppose McCrae’s local operations had two departments. In the larger department about 45 sales invoices are completed each day; in the smaller department about 15 sales invoices are completed each day. About 50 percent of all sales invoices completed in each department specify discounts from the company’s list prices. However, the exact percentage varies from day to day. Sometimes it may be higher than 50 percent, sometimes lower.

For a period of one year, and for each department, a member of your audit team kept track of the number of days on which more than 60 percent of the sales invoices specified discounts. Which department do you think showed the greater number of such days? Please check one:

[ ] The larger department.
[ ] The smaller department.
[ ] About the same.

After 3 minutes from the start time of this task, the researcher will indicate for you to place Booklet #2 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #3 until the researcher has instructed you to do so.
BOOKLET #3

AUDIT PLANNING: Phase 2

After 5 minutes from the start time, the researcher will indicate for you to place Booklet #3 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #4 until the researcher has instructed you to do so.
In the space provided below, please recall as many strengths of McCrae’s control environment as possible. In other words, recall as many favourable information items of McCrae’s control environment that would decrease the risk of material misstatement. Word for word is not necessary, just the gist will suffice. However, please be as specific as possible.

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After 5 minutes from the start time of this task, the researcher will indicate for you to place Booklet #3 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #4 until the researcher has instructed you to do so.
After 5 minutes from the start time, the researcher will indicate for you to place Booklet #4 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #5 until the researcher has instructed you to do so.
In the space provided below, please recall as many weaknesses of McCrae’s control environment as possible. In other words, recall as many unfavourable information items of McCrae’s control environment that would increase the risk of material misstatement. Word for word is not necessary, just the gist will suffice. However, please be as specific as possible.

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After 5 minutes from the start time of this task, the researcher will indicate for you to place Booklet #4 in the completed material envelope provided.

You will not be able to access this material again.

Please do not proceed onto Booklet #5 until the researcher has instructed you to do so.
The remaining tasks have **no time limits**. Please take as much time as necessary to respond.

Please proceed through the following tasks in order as they appear. Please do not return to any questions afterwards – hindsight may invalidate the results.

Once complete, place Booklet #5 in the completed material envelope provided, and return the envelope to the researcher.
1) Indicate your preliminary assessment of the effectiveness of the control environment at McCrae. Please place an “X” on the scale that most accurately reflects your assessment.

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<th>Very Ineffective</th>
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2) Presented below are two sets of financial ratios based on McCrae’s financial statements. The ratios in the first column were projected and developed by your audit team based on expectations on results from previous quarters of the current year, past audited results, and industry trends. In the second column are ratios computed from the current year unaudited statements (i.e., McCrae’s representations of end-of-year balances). The difference between the audit team’s expected ratio and the unaudited actual ratio could be the result of normal year-to-year variation and/or an error in the unaudited statements which has a material effect on net income or total assets/liabilities. At the current stage of the audit, you have no other reason to expect major changes among the financial relationships.

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<th>FINANCIAL RATIOS</th>
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<tr>
<td>Gross Margin</td>
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<tr>
<td>Current Ratio</td>
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<tr>
<td>Quick Ratio</td>
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Upon seeing the differences between the audit team’s expected ratios and the current year unaudited ratios, you decide to obtain an explanation from management. The controller explains that McCrae recently instituted more liberal terms for credit customers.

How likely is it that the differences noted between the expected and unaudited ratios are due to the more liberal terms for credit customers? Please place an “X” on the scale that most accurately reflects your assessment.

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<tr>
<th>Extremely Unlikely</th>
<th>Unlikely</th>
<th>Uncertain</th>
<th>Likely</th>
<th>Extremely Likely</th>
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134
Demographic Information and General Concluding Questions

How many years of audit experience have you had? _______ years

What is your position? Please check one:

_____ Audit partner
_____ Audit manager
_____ Staff Auditor
_____ Other – Please specify: _______________________

Gender: Male _____ Female _____

Experience in audit is with (check all that apply):

_____ Public companies
_____ Large private companies
_____ Government and non-profit
_____ Medium and small private companies
_____ Other – please specify: _______________________

What is your area of industry specialization in auditing (if applicable)? _________________

Prior to participating in this project, how recently have you participated in the evaluation or documentation of a client’s control environment? _________ month(s) ago.

Prior to participating in this project, how recently have you conducted an analysis which included analytical procedures, such as ratio or variance analysis, of a client? _________ month(s) ago.

Please respond to the following by placing an “X” on the scale that most accurately reflects your assessment.

1) At McCrae Technologies Inc., what did the controller indicate was the objective of the design of the internal control system?

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<th>Discourage Dishonesty</th>
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<th>Encourage Honesty</th>
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135
2) I was asked to recall strengths (i.e., favourable information items) of McCrae’s control environment before recalling weaknesses (i.e., unfavourable information items) of McCrae’s control environment.

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<tr>
<th>Completely Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
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3) How much experience have you had in evaluating the effectiveness of a client’s control environment?

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<th>No Experience</th>
<th>Very Extensive Experience</th>
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4) How familiar are you with COSO Internal Control – Integrated Framework?

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<th>Not Familiar</th>
<th>Very Familiar</th>
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5) How much experience have you had in conducting analytical procedures, such as ratio or variance analysis?

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<th>No Experience</th>
<th>Very Extensive Experience</th>
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6) Assess the likelihood that McCrae’s control environment will prevent a misstatement arising from fraudulent financial reporting.

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<th>Highly Unlikely</th>
<th>Uncertain</th>
<th>Highly Likely</th>
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7) Assess the likelihood that McCrae’s control environment will prevent a misstatement arising from the misappropriation of assets.

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<th>Highly Unlikely</th>
<th>Uncertain</th>
<th>Highly Likely</th>
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8) The case was easy to understand.

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<tr>
<th>Completely Disagree</th>
<th>Neither Agree nor Disagree</th>
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9) If applicable, where did you find the case difficult to understand?

________________________________________________________________________

10) The case was very realistic.

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<tr>
<th>Completely Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
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11) The time allowed to complete the materials was sufficient.

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<th>Completely Disagree</th>
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12) If you thought the time allowed to complete the materials was not appropriate, please indicate where you would have wanted more or less time by ticking the appropriate box for each booklet, and indicating an estimate of how many more/less minutes you would have preferred:

<table>
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<th>More time</th>
<th>Less time</th>
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a) Booklet #3 – First set of recalls

b) Booklet #4 – Second set of recalls
13) In your opinion, what is “honesty” in the workplace? Please provide a few examples.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14) In your opinion, what is “dishonesty” in the workplace? Please provide a few examples.

________________________________________________________________________
________________________________________________________________________
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15) In your opinion, what is a stronger internal control system? Please check one:

_____ A control system that has been designed to create and maintain honesty in the workplace.
_____ A control system that has been designed to deter and detect dishonesty in the workplace.

Why?
________________________________________________________________________
________________________________________________________________________
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16) Prior to participating in the study today, did anyone tell you details about the study or tell you about the tasks contained in the study? This does not include the general announcement of the study.

_____ Yes
_____ No

If you answered yes, what specifically were you told about the study prior to participating today?
________________________________________________________________________
________________________________________________________________________
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17) Have you participated in this study previously?

_____ Yes
_____ No

If you answered yes, when did you previously participate in this study? ____________________
PLEASE: AFTER YOU HAVE COMPLETED THIS STUDY, DO NOT DISCUSS THIS STUDY WITH OTHER AUDITORS

When complete, please seal Booklet #5 in the completed material envelope.

Please return all materials to the researcher.

Thank you!
Panel B: Hypothesis Testing Experimental Instruments
(Version: Checklist Decision Aid/Ethical Hypothesis/Competent Hypothesis)

DIRECTIONS

Assume that you are assigned to the audit of McCrae Technologies Inc. (MTI), and that you are participating in the preliminary planning phases. In this study, you will be asked to make a series of judgments relating to the design of the audit program. Consistent with audit standards and related internal control frameworks, these judgments will involve developing a deeper understanding of MTI’s control environment.

It is important that you proceed through the materials in order, follow the instructions contained therein, and answer the questions in the order they are asked. Please do not change any answer or add to it after you have moved on – hindsight may invalidate the results. Please do not inspect any of the subsequent material. That is, start with the first task presented, work on only that task, and then proceed to the subsequent task. Other than the materials provided, no other reference material or tools is allowed.

All completed materials will be kept completely confidential. Once complete, please seal the materials in the provided envelope and return to the researcher.

THANK YOU!
Part A

You are the auditor assigned to the 2009 fiscal year-end audit of McCrae Technologies Inc. (MTI). You are responsible for preparing audit tests or procedures to evaluate specific aspects of MTI’s control environment which has experienced change during the fiscal year as will be described below.

Company Background: McCrae Technologies Inc. (MTI)

MTI’s stock is publicly traded on both the Toronto Stock Exchange and New York Stock Exchange. MTI is an international manufacturer of precision, high-technology instruments, with manufacturing operations primarily within Canada. Its products are sold in many countries, including Canada and the United States. MTI is a leader and pioneer in developing innovative systems and technologies in its areas of expertise. MTI’s market niche is in a growing area whereby new markets and new products should provide significant opportunities for sales growth. However, these opportunities attract competition which focuses MTI to take advantage of its established record of innovation and leadership. As such, MTI operates significant research and development centres in Canada and the United States, and holds patents on any important instruments.

MTI has historically been a somewhat conservative company that now finds itself straining to keep up in an increasingly dynamic and competitive business environment. Although its profits have been positive and generally increasing over the past nine years since the company’s inception, MTI has struggled under the current tough economic climate. MTI barely achieved a positive net income in the unaudited 2009 fiscal year-end financial statements, which is lower than previously anticipated. MTI has not yet released any unaudited earnings figures as they generally wait until the audit of the financial statements is almost totally finalized before doing so.

Your firm has audited MTI for the past four years since the company has become publicly traded, and has again been hired to perform an integrated audit of their financial statements and internal controls over financial reporting for the fiscal year ended December 31, 2009. All previous audit opinions have been unqualified. Historically, your firm maintains a good working relationship with MTI and has found management, accounting staff, and employees to be generally cooperative.

MTI Management

In the first quarter of 2009, the chief financial officer (CFO) of MTI retired. She had been with the company since its inception, and was instrumental in facilitating a co-operative and smooth year-end audit. The firm had succession plans in place, and had appointed a new CFO, Dan Carroll, in the first quarter of 2009 in order to achieve the least disruptive transition as possible. Dan Carroll was an external hire (i.e., not previously employed by MTI), and your audit firm has no prior experience or information about Dan.

During the quarterly review engagements in fiscal 2009, the audit team has found that relations with MTI have changed. However, the cause of the change is difficult to identify given that the economic crunch roughly coincided with the appointment of the new CFO, Dan Carroll. As an example, one of the staff auditors noted that in the past, the CFO and accounting staff would be readily available for the audit team. However, in the quarterly reviews to date in 2009, the client accounting staff
appears to be considerably busy and less than punctual on delivering promised documents such as aged account balances, R&D schedules, etc. Occasionally, when documents are delivered, they are outdated versions that are not reconciled to the unaudited adjusted trial balances.

The chief executive officer (CEO) of MTI, Cynthia Hubick, has a university degree in computer science and engineering. She was the founder of MTI and focuses her attention on operations rather than financial reporting.

The Director of Internal Audit is Linda Johnstone who has been with MTI since its inception and is within five years of retirement. Linda is a Chartered Accountant (CA) with a Certified Internal Auditor (CIA) specialization. Linda reports to the CFO and provides annual updates to the Audit Committee.

**MTI Board of Directors**

MTI’s Board of Directors is comprised of seven members. The Chair of the Board, Mark Bitz, is a former ROB 100 CEO who has several active directorships and is independently wealthy. The only internal director is the CEO, Cynthia Hubick. The five outside directors include:

- Fred Plumlee, a senior partner of a major law firm that does very limited business with MTI,
- John McDonald, a leading industrialist in another sector,
- Duncan Brown, a retired CFO from a major supplier,
- Reginald Coxwell, a former audit partner from an international accounting firm, and
- Margo Orser, the President of a local non-profit.

Reginald Coxwell chairs the Audit Committee; the two other members are Fred Plumlee and Duncan Brown. The committee meets four times a year for about one hour to review the financial statements before they are released. Although the committee members have always had cordial relations with the audit team and engagement audit partner, the committee only occasionally interacts with the auditor outside of its formal meetings and rarely meets with the auditor in private without management present.

**MTI Control Environment**

Briefly, audit standards note that the control environment sets the tone of an organization, influencing the control consciousness of its people. It is the foundation for all other components of internal control, providing discipline and structure. Control environment factors include the integrity, ethical values and competence of the entity’s people; management’s philosophy and operating style; the way management assigns authority and responsibility, and organizes and develops its people; and the attention and direction provided by the board of directors.

Given the recent appointment of the new CFO, Dan Carroll, it is critical that the audit firm learn about Dan Carroll as it impacts MTI’s control environment. Specifically, Dan Carroll may have a considerable influence on the organization’s tone, impacting auditor reliance on internal controls, and therefore the audit program. However, at this early stage of the audit, the audit team is relatively unfamiliar with the new CFO, and therefore it is necessary to develop audit tests/procedures to gain a better insight into the effectiveness of internal controls as it is impacted by Dan Carroll. You have been assigned responsibility for this task.
Part B

Task 1: In the space provided below, prepare audit tests or procedures to test whether the new CFO, Dan Carroll, is ethical in his financial reporting and internal control over financial reporting responsibilities. Try to create at a minimum 5 audit tests/procedures. The tests/procedures you design may fall into any of the general categories of audit evidence such as inquiry directed to the CFO or others, observation, confirmation, inspection of records/documents/assets, recalculation, reperformance, analytical procedures and/or any other method that is appropriate.

Firm Guidance: As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO Internal Control – Integrated Framework, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

EVALUATION TOOLS (A) – Firm guidance to aid in audit test/procedure design to address the problem of uncertainty regarding CFO ethicality:

<table>
<thead>
<tr>
<th>Points of focus for the possibilities that the CFO is ethical or unethical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Existence and implementation of codes of conduct and other policies regarding acceptable business practice, conflict of interest, or expected standards of ethical and moral behaviour.</td>
</tr>
<tr>
<td>2. Establishment of the “tone at the top” – including explicit moral guidance about what is right and appropriate – and extent of its communication throughout the organization.</td>
</tr>
<tr>
<td>3. Whether management conducts business on a high ethical plane, and insists that others do so (e.g., employees, suppliers, customers, investors, creditors, insurers, competitors, and auditors, etc.).</td>
</tr>
<tr>
<td>4. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or violations of the code of conduct. Extent to which remedial action/discipline is communicated or otherwise becomes known throughout the entity.</td>
</tr>
<tr>
<td>5. Management’s willingness to override established controls or intervene in the financial reporting process.</td>
</tr>
<tr>
<td>6. Pressure to meet unrealistic performance targets – particularly for short term results – and extent to which compensation is based on achieving those unrealistic performance targets.</td>
</tr>
<tr>
<td>7. Other</td>
</tr>
</tbody>
</table>
To repeat, your task is to prepare at a minimum 5 audit tests/procedures to test whether the new CFO is ethical in his financial reporting and internal control over financial reporting responsibilities.

Please make your audit tests/procedures very specific. Clearly indicate exactly what the test/procedure is in detail, and what is to be noted when conducting this test/procedure. Do not proceed until you are done this task or have exhausted the tests/procedures you are able to prepare.

<table>
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<th>Test #</th>
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</tbody>
</table>

More room on next page
Task 2: Suppose that the audit engagement partner created 8 possible audit tests/procedures listed below to test whether the new CFO, Dan Carroll, is ethical in his financial reporting and internal control over financial reporting responsibilities. Pick ONLY 4 of the following 8 tests/procedures, and rank them in order by placing a “1” beside the test/procedure you would want to perform first, a “2” beside the test/procedure you would want to perform second, a “3” beside the test/procedure you would want to perform third, and finally a “4” beside the test/procedure you would want to perform fourth. The remaining tests/procedures should not be ranked, and therefore left blank.

Assume that the necessary approvals and authorizations from all parties to conduct the following tests/procedures have been obtained, and hence, each is a plausible audit test/procedure. Furthermore, assume that all tests/procedures take roughly the same amount of budgeted hours to conduct. **Please do not add any of these tests/procedures to your previous list.**

**Firm Guidance:** As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO Internal Control – Integrated Framework, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

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To repeat, your task is to select and rank the 4 audit tests/procedures you would want to perform to test whether the new CFO is ethical in his financial reporting and internal control over financial reporting responsibilities.

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<td>1</td>
<td>Request that each member of the board of directors provide to the auditor, on a confidential basis, character reference letters and/or letters of reference for Dan Carroll, with specifics as to how he has exemplified ethical values when carrying out his responsibilities.</td>
</tr>
<tr>
<td>2</td>
<td>Conduct a confidential electronic workplace survey among the accounting staff and select employees to assess whether any issues have arisen such as pressure to meet performance targets, unrealistic expectations, or any other problems.</td>
</tr>
<tr>
<td>3</td>
<td>Require that MTI issue a press release to external stakeholders (e.g., creditors) and internal employees requesting confidential feedback on the prior business practices of Dan Carroll to be sent directly to the auditor.</td>
</tr>
<tr>
<td>4</td>
<td>Confirmation to the professional institutes as to whether there are any allegations of unethical behaviour/complaints historically or under investigation for Dan Carroll. Also, confirmation to all universities to ascertain if Dan was ever involved in academic misconduct.</td>
</tr>
<tr>
<td></td>
<td>Confirmations to all professional institutes to verify that Dan Carroll’s professional memberships are active and in good standing. Also, confirmation to all universities to ensure that all degrees recorded on Dan’s resume have been conferred.</td>
</tr>
<tr>
<td></td>
<td>With the assistance of the audit firm’s forensic group which is comprised of Investigative and Forensic Accounting (IFA) specialists, conduct an interview on Dan Carroll and administer psychometric tests designed to identify potential unethical propensities or behaviour.</td>
</tr>
<tr>
<td></td>
<td>Inspect Dan Carroll’s annual declaration of conformity with MTI’s code of ethical conduct, and verify Dan’s completion of MTI’s mandatory ethics training.</td>
</tr>
<tr>
<td></td>
<td>Inquire with MTI’s Ombudsman, who is responsible for MTI’s whistle-blowing procedures, to ascertain if any issues, concerns, or red flags have arisen regarding Dan Carroll’s ethics, especially as it relates to potentially fraudulent financial reporting.</td>
</tr>
</tbody>
</table>
**Part C**

**Task 3:** In the space provided below, prepare audit tests or procedures to test whether the new CFO, Dan Carroll, is competent in his financial reporting and internal control over financial reporting responsibilities. Try to create at a minimum 5 audit tests/procedures. The tests/procedures you design may fall into any of the general categories of audit evidence such as inquiry directed to the CFO or others, observation, confirmation, inspection of records/documents/assets, recalculation, reperformance, analytical procedures and/or any other method that is appropriate.

**Firm Guidance:** As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO Internal Control – Integrated Framework, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

**EVALUATION TOOLS (B) – Firm guidance to aid in audit test/procedure design to address the problem of uncertainty regarding CFO ability:**

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<th>Points of focus for the possibilities that the CFO is competent or incompetent</th>
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<td>1. Formal or informal job descriptions or other means to clearly define the tasks that comprise the CFO’s job.</td>
</tr>
<tr>
<td>2. Analyses of the CFO’s knowledge and skills needed to perform his/her job responsibilities adequately.</td>
</tr>
<tr>
<td>3. Extent to which policies and procedures for hiring, training, promoting and compensating the CFO are in place.</td>
</tr>
<tr>
<td>4. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or failures to carry out assigned duties.</td>
</tr>
<tr>
<td>5. Adequacy of CFO candidate background checks, particularly with regard to prior actions or activities considered to be unacceptable by the entity.</td>
</tr>
<tr>
<td>6. Adequacy of information-gathering techniques to capture inadequate CFO job performance or inappropriate behaviour, and the extent to which these infractions impact CFO dismissals, retention, etc.</td>
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To repeat, your task is to prepare at a minimum 5 audit tests/procedures to test whether the new CFO is competent in his financial reporting and internal control over financial reporting responsibilities.

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*More room on next page*
Task 4: Suppose that the audit engagement partner created 8 possible audit tests/procedures listed below to test whether the new CFO, Dan Carroll, is competent in his financial reporting and internal control over financial reporting responsibilities. Pick ONLY 4 of the following 8 tests/procedures, and rank them in order by placing a “1” beside the test/procedure you would want to perform first, a “2” beside the test/procedure you would want to perform second, a “3” beside the test/procedure you would want to perform third, and finally a “4” beside the test/procedure you would want to perform fourth. The remaining tests/procedures should not be ranked, and therefore left blank.

Assume that the necessary approvals and authorizations from all parties to conduct the following tests/procedures have been obtained, and hence, each is a plausible audit test/procedure. Furthermore, assume that all tests/procedures take roughly the same amount of budgeted hours to conduct. **Please do not add any of these tests/procedures to your previous list.**

Firm Guidance: As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO *Internal Control – Integrated Framework*, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

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</thead>
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<td>1</td>
<td>Conduct a confidential electronic workplace survey among the accounting staff and select employees to assess whether there are signs or concerns regarding Dan Carroll’s inability to carry out his assigned duties with specific questions focusing on financial reporting and internal control over financial reporting incompetence.</td>
</tr>
<tr>
<td>2</td>
<td>Confirmation to the professional institutes for Dan Carroll’s annual declaration of compliance with the mandated continuing education requirements. Inspect receipts and confirmations to ensure that the professional development courses Dan Carroll has taken are value added and complimentary to his CFO role.</td>
</tr>
<tr>
<td>3</td>
<td>Confirmation to the professional institute as to whether there are any allegations of incompetent behaviour historically or under investigation for Dan Carroll especially as it relates to his new CFO responsibilities.</td>
</tr>
<tr>
<td>4</td>
<td>Inspect MTI’s human resource departments’ due diligence documentation on Dan Carroll verifying he possessed the necessary credentials and surpassed benchmarks of financial reporting and internal control over financial reporting competency for the position of CFO.</td>
</tr>
<tr>
<td></td>
<td>Senior audit team members (e.g., engagement partner) interview Dan Carroll to ascertain whether the issues noted to date were a result of the CFO misunderstanding accounting principles and/or control procedures. Obtain and inspect current schedules, for example R&amp;D capitalizations, for conceptual errors and/or internal control deficiencies.</td>
</tr>
<tr>
<td></td>
<td>Reperform (or perform) background and reference checks on Dan Carroll’s expertise in financial reporting and internal control over financial reporting.</td>
</tr>
<tr>
<td></td>
<td>Have a formal confidential meeting with Linda Johnstone, the Director of Internal Audit, to assess whether any issues, concerns or red flags have arisen in her internal investigations as to the competence of Dan Carroll in his financial reporting and internal control over financial reporting duties. If red flags are present, ascertain what subsequent steps have been taken.</td>
</tr>
<tr>
<td></td>
<td>Inquire with the audit committee, especially Reginald Coxwell and Duncan Brown, as to how they have monitored and/or improved the competence of Dan Carroll in performing his CFO responsibilities, and their satisfaction to date. Inspect related documentation such as performance evaluations.</td>
</tr>
</tbody>
</table>
Part D

Demographic Information and General Concluding Questions

How many years of audit experience have you had? ____________ Year(s)

What is your position? Please check one:

- Audit partner
- Audit manager
- Senior staff auditor
- Junior staff auditor
- Student (Accounting and/or audit)
- Other – Please specify: ____________

Audit firm: Big-4 _____  Non-Big-4 _____

Gender: Male _____  Female _____

Experience in audit is with (check all that apply):

- Public companies
- Large private companies
- Government and non-profit
- Medium and small private companies
- Other – please specify: ____________

Prior to participating in this project, how recently have you participated in the evaluation, testing, or documentation of a client’s control environment? _____ month(s) ago or check if never ____ .

Please respond to the following by placing an “X” on the scale that most accurately reflects your assessment.

1) How much experience have you had in evaluating the effectiveness of a client’s control environment?

<table>
<thead>
<tr>
<th>No Experience</th>
<th>Very Extensive Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

2) How familiar are you with COSO Internal Control – Integrated Framework?

<table>
<thead>
<tr>
<th>Not Familiar</th>
<th>Very Familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
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</tbody>
</table>
3) In your professional opinion, how important is an ethical CFO for the integrated audit?

<table>
<thead>
<tr>
<th>Not Important</th>
<th>Very Important</th>
</tr>
</thead>
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<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

4) In your professional opinion, how important is CFO competence for the integrated audit?

<table>
<thead>
<tr>
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<tbody>
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<td>0 1 2 3 4 5 6 7 8 9 10</td>
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</tr>
</tbody>
</table>

5) To what extent do you think that a person who is very ethical can adequately portray a person who is very unethical?

<table>
<thead>
<tr>
<th>Not Likely</th>
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</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
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</table>

6) To what extent do you think that a person who is very unethical can adequately portray a person who is very ethical?

<table>
<thead>
<tr>
<th>Not Likely</th>
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<tr>
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</table>

7) To what extent do you think that a person who is very competent can adequately portray a person who is very incompetent?

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8) To what extent do you think that a person who is very incompetent can adequately portray a person who is very competent?

<table>
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</table>
9) The case was easy to understand.

<table>
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<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
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</tr>
</tbody>
</table>

10) If applicable, where did you find the case difficult to understand?

11) The case was very realistic.

<table>
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</table>

12) In the prior tasks, I was asked to develop and select audit tests to test whether the CFO was:

Unethical | Uncertain | Ethical
<table>
<thead>
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<tbody>
<tr>
<td>-5</td>
<td>-4</td>
<td>-3</td>
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<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
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<tr>
<td>1</td>
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<tr>
<td>4</td>
<td>5</td>
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</tbody>
</table>

13) In the prior tasks, I was asked to develop and select audit tests to test whether the CFO was:

Incompetent | Uncertain | Competent
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>-5</td>
<td>-4</td>
<td>-3</td>
</tr>
<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>4</td>
<td>5</td>
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</tbody>
</table>

14) In the case you just completed, did your audit firm provide firm guidance in the form of “evaluation tools” to aid in developing and selecting your audit tests/procedures?

<table>
<thead>
<tr>
<th>Not Provided</th>
<th>Uncertain</th>
<th>Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>-4</td>
<td>-3</td>
</tr>
<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
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<tr>
<td>1</td>
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<td>3</td>
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<tr>
<td>4</td>
<td>5</td>
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</tr>
</tbody>
</table>

15) When developing your audit tests/procedures in the previous tasks, were you provided with evaluation tools such as a diagram or checklist to help you in constructing these tests/procedures?

<table>
<thead>
<tr>
<th>Not Provided</th>
<th>Uncertain</th>
<th>Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>-4</td>
<td>-3</td>
</tr>
<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
16) If you were provided with an evaluation tool such as a checklist or diagram, did you find it useful?

| Very Useless | -5 |
| -4 |
| -3 |
| -2 |
| -1 |
| Uncertain | 0 |
| Useful | 1 |
| 2 |
| 3 |
| 4 |
| Very Useful | 5 |

17) In your professional opinion, do you believe that dishonest financial reporting is unethical?

| Strongly Disagree | -5 |
| -4 |
| -3 |
| -2 |
| -1 |
| Neither Agree nor Disagree | 0 |
| Agree | 1 |
| 2 |
| 3 |
| 4 |
| Strongly Agree | 5 |

18) In your professional opinion, do you believe that honest financial reporting is ethical?

| Strongly Disagree | -5 |
| -4 |
| -3 |
| -2 |
| -1 |
| Neither Agree nor Disagree | 0 |
| Agree | 1 |
| 2 |
| 3 |
| 4 |
| Strongly Agree | 5 |

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

### Statements

1. I often accept other people’s explanations without further thought........1 2 3 4 5 6
2. I feel good about myself. .................................................................1 2 3 4 5 6
3. I wait to decide on issues until I can get more information ..................1 2 3 4 5 6
4. The prospect of learning excites me..................................................1 2 3 4 5 6
5. I am interested in what causes people to behave the way that they do........1 2 3 4 5 6
6. I am confident of my abilities ........................................................1 2 3 4 5 6
7. I often reject statements unless I have proof that they are true ..........1 2 3 4 5 6
8. Discovering new information is fun................................................1 2 3 4 5 6
9. I take my time when making decisions .........................................1 2 3 4 5 6
10. I tend to immediately accept what other people tell me...............1 2 3 4 5 6
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th></th>
<th></th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Other peoples’ behavior doesn’t interest me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>I am self-assured</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>My friends tell me that I usually question things that I see or hear</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14.</td>
<td>I like to understand the reason for other peoples’ behavior</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15.</td>
<td>I think that learning is exciting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16.</td>
<td>I usually accept things I see, read or hear at face value</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17.</td>
<td>I don’t feel sure of myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.</td>
<td>I usually notice inconsistencies in explanations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.</td>
<td>Most often I agree with what the others in my group think</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.</td>
<td>I dislike having to make decisions quickly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21.</td>
<td>I have confidence in myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22.</td>
<td>I don’t like to decide until I’ve looked at all of the readily available information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23.</td>
<td>I like searching for knowledge</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24.</td>
<td>I frequently question things that I see or hear</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25.</td>
<td>It is easy for other people to convince me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26.</td>
<td>I seldom consider why people behave in a certain way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27.</td>
<td>I like to ensure that I’ve considered most available information before making a decision</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28.</td>
<td>I enjoy trying to determine if what I read or hear is true</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29.</td>
<td>I relish learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30.</td>
<td>The actions people take and the reasons for those actions are fascinating</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
</tbody>
</table>

A(i) Prior to participating in this study today, did anyone tell you details about the study or tell you about the tasks contained in the study? This does not include the general announcement of the study. _______NO _______YES

A(ii) If yes, what specifically were you told about the study prior to participating today?

______________________________________________________________________

B(i) Have you participated in this study previously? _______NO _______YES

B(ii) If you answered yes, when specifically did you previously participate in this study?__________
PLEASE: AFTER YOU HAVE COMPLETED THIS STUDY,
DO NOT DISCUSS THIS STUDY WITH OTHER
AUDITORS

When complete, please enclose the completed package in the envelope provided and return to the researcher.

Thank you kindly!
Panel C: Schematic Decision Aid for Ethical/Unethical Trait Dimension

Firm Guidance: As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO Internal Control – Integrated Framework, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

EVALUATION TOOLS (A) – Firm guidance to aid in audit test/procedure design:

Problem: Uncertainty regarding CFO ethicality

Possibilities:
- CFO is Ethical
- CFO is Unethical

Points of Focus:
1. Existence and implementation of codes of conduct and other policies regarding acceptable business practice, conflict of interest, or expected standards of ethical and moral behaviour.
2. Establishment of the “tone at the top” – including explicit moral guidance about what is right and appropriate – and extent of its communication throughout the organization.
3. Whether management conducts business on a high ethical plane, and insists that others do so (e.g., employees, suppliers, customers, investors, creditors, insurers, competitors, and auditors, etc.).
4. Other

1. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or violations of the code of conduct. Extent to which remedial action/discipline is communicated or otherwise becomes known throughout the entity.
2. Management’s willingness to override established controls or intervene in the financial reporting process.
3. Pressure to meet unrealistic performance targets – particularly for short term results – and extent to which compensation is based on achieving those unrealistic performance targets.
4. Other
Panel D: Schematic Decision Aid for Competence/Incompetence Trait Dimension

Firm Guidance: As part of your task below, your firm has created the following “Evaluation Tools” to aid in developing audit tests/procedures. The aid was developed based on guidance in the COSO Internal Control – Integrated Framework, and considerable input from auditors from all levels of the firm. It has been found to be an effective and efficient aid to ascertain client management’s impact on the control environment as it relates to the audit. Audit tests/procedures should be developed in order to find the necessary audit evidence to support a conclusion.

EVALUATION TOOLS (B) – Firm guidance to aid in audit test/procedure design:

Problem: Uncertainty regarding CFO ability

Possibilities:
- CFO is Competent
- CFO is Incompetent

Points of Focus:
1. Formal or informal job descriptions or other means to clearly define the tasks that comprise the CFO’s job.
2. Analyses of the CFO’s knowledge and skills needed to perform his/her job responsibilities adequately.
3. Extent to which policies and procedures for hiring, training, promoting and compensating the CFO are in place.
4. Other

1. Appropriateness of remedial action/discipline taken in response to departures from approved policies and procedures or failures to carry out assigned duties.
2. Adequacy of CFO candidate background checks, particularly with regard to prior actions or activities considered to be unacceptable by the entity.
3. Adequacy of information-gathering techniques to capture inadequate CFO job performance or inappropriate behaviour, and the extent to which these infractions impact CFO dismissals, retention, etc.
4. Other