WHAT DID THE CLIENT SAY? AUDITOR MEMORY OF A CLIENT INQUIRY: A STUDY OF ENCODING STYLE AND NOTE TAKING

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Client inquiry is a fundamental procedure for gathering audit evidence. Since inquiries are not audio- or video-recorded in practice, auditor memory is vital to the accuracy of evidence gathered in this manner. Due to the potential for error during memory encoding and retrieval, the effect of memory on judgment, and the cognitive complexity of conducting a face-to-face inquiry, examining factors affecting auditor memory of client inquiries is important. In this dissertation, I examine two factors likely to affect auditor memory of a client inquiry.

First, encoding style is a low-level cognitive function representing how much stimuli an individual perceives before applying prior knowledge (schemata) to assist with encoding to long-term memory, affecting information noticed and remembered. Differences in auditors’ encoding style may explain variance in memory accuracy of evidence gathered from a client inquiry.

Second, audit professionals often make hand-written or typed notes during client inquiries, and subsequently review the notes, which may affect memory.

To address these issues, I first gather interview evidence from six professional auditors to determine how practicing auditors plan, prepare for, conduct, and document evidence from client inquiries. I then develop and execute a video-based experiment with 33 senior auditor participants, 23 masters-level accounting students, and 47 undergraduate-level accounting students to investigate whether encoding style and note taking affect auditor memory accuracy of, and audit judgments resulting from, a client inquiry.

I find multiple significant results. First, I find that encoding style affects memory accuracy such that auditors quickly utilizing prior knowledge during an inquiry results in greater
memory accuracy than auditors slowly utilizing prior knowledge. This finding suggests that quickly utilizing prior knowledge helps auditors to manage the cognitive complexity of a client inquiry. Second, I find that participants who take notes during an inquiry, and subsequently review his or her notes taken, have lesser memory accuracy than participants who do not take notes. This finding suggests note taking distracts participants during an inquiry, hindering memory accuracy. Third, I find that memory accuracy affects audit judgments such that memory accuracy is positively related to judging the client’s explanation as reasonable, and negatively related to judging the probability of material misstatement and likelihood to increase substantive testing. Finally, I find that encoding style has a significant indirect effect on audit judgment through memory accuracy.

This study makes several contributions to audit practice and academic literature. First, this study contributes a discussion of how auditors conduct client inquiries based on interviews with very-experienced auditors from multiple accounting firms, representing various firm sizes. No prior research provides qualitative evidence of how auditors conduct inquiries. Second, this study contributes to the audit literature by finding that encoding style and note taking affect auditor memory accuracy of a client inquiry. Although the findings do not support hypotheses suggested by theory, the findings suggest further research in the topic is warranted. Third, this study contributes to the psychology literature by finding that encoding style affects memory in an information-robust, professional context, extending the generalizability of the encoding style construct beyond the abstract tasks with which it has been previously examined.
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# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................................................................................................................... iii

LIST OF TABLES ...................................................................................................................................................... vi

LIST OF FIGURES .................................................................................................................................................... vii

Chapters

1. INTRODUCTION ...................................................................................................................................................... 1
   Introduction ......................................................................................................................................................... 1

2. LITERATURE REVIEW ........................................................................................................................................... 6
   Client Inquiries .................................................................................................................................................. 6
   Auditor Memory ............................................................................................................................................... 13
   Encoding Style ............................................................................................................................................... 22
   Note Taking .................................................................................................................................................... 31
   Audit Judgment ............................................................................................................................................. 39

3. PRACTITIONER INTERVIEWS ............................................................................................................................. 42
   Interview Design ........................................................................................................................................... 42
   Interview Results ............................................................................................................................................ 45

4. METHODOLOGY ....................................................................................................................................................... 58
   Experimental Design ....................................................................................................................................... 58
   Task Development ........................................................................................................................................... 61
   Variables ......................................................................................................................................................... 65

5. RESULTS .................................................................................................................................................................... 71
   Participant Demographics ................................................................................................................................. 71
LIST OF TABLES

1. Interviewee Demographics ................................................................................................45
2. Summary of Difficulties Encountered by Auditors Conducting Client Inquiries ..........51
3. Experimental Steps ............................................................................................................61
4. Participant Demographics ..................................................................................................73
5. Distribution of Participants to Note Taking Conditions ....................................................74
6. Analysis of Participants’ Motivation .................................................................................76
7. Factor Analysis Results ......................................................................................................78
8. Variable Means, Standard Deviations, and Pearson Correlations .....................................83
9. ANOVA of Professionals and Students .............................................................................84
10. Linear Regression Memory Accuracy Measures on Encoding Style ..............................86
11. Analysis of Memory Accuracy by Note Taking Condition .............................................90
12. Analysis of the Interaction between Note Taking Condition and Encoding Style Type ....92
13. Regression of Audit Judgment Variables on Memory Accuracy Variables ....................98
14. Test of Indirect Effects of Encoding Style on Audit Judgments through Memory Accuracy ..........................................................101
LIST OF FIGURES

Page

1. Interaction Between Encoding Style and Note Taking on Memory Accuracy ...............39
2. Theoretical Model with Hypotheses Labeled .................................................................41
3. Results of Interaction Between Encoding Style and Note Taking on Explicit/Summary Accuracy .........................................................................................................................95
CHAPTER 1

INTRODUCTION

Introduction

In this study, I examine whether encoding style and note taking affect auditor memory accuracy of, and judgments resulting from, evidence presented in a client inquiry.\(^1\) Client inquiry, which “consists of seeking information from knowledgeable persons in financial or nonfinancial roles within the company,” is a fundamental procedure in financial statement auditing (AS 15.17, PCAOB 2010a). Client inquiries are performed face-to-face as part of many audit tasks, including understanding and testing internal controls (AS 5, PCAOB 2007), substantive analytics (AU 329, PCAOB 2010b), risk assessments (AS 12, PCAOB 2010c), and developing or updating understanding of a client (AS 9, PCAOB 2010d). Although ubiquitous in audits, client inquiries are cognitively complex tasks requiring auditors to simultaneously listen to a client, discern important evidence, encode evidence to memory, develop relevant follow-up questions, and observe non-verbal cues.\(^2\) Additionally, client inquiries cannot be re-examined or re-performed exactly as they occurred since they are not audio- or video-recorded in practice.\(^3\) This complexity presents potential problems for auditors accurately gathering evidence from inquiries, and increases the importance of auditor memory for the details of an inquiry.

Identifying factors affecting auditor performance of client inquiries is important given the potential for auditors to use inquiry evidence to identify errors and direct attention during subsequent procedures (Wright and Ashton 1989). Specifically, examining auditor memory

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\(^{1}\) Memory accuracy is often defined in accounting research in terms of an outcome of recall or recognition tasks. Consistent with this, I define memory accuracy as memories that, when retrieved, are correct to the target fact, event, or experience.

\(^{2}\) Auditors may develop questions \textit{a priori} or utilize standardized questionnaires for client inquiries. Clients often share information requiring auditors to seek further clarification in the moment by developing and asking relevant follow-up questions. Wright and Ashton (1989) find auditors identify a greater number of errors through casual discussion during inquiries than through using standardized questionnaires during inquiries.

\(^{3}\) This is based on my first-hand work experience and discussions with auditors- see Chapter 3.
accuracy of evidence obtained during a client inquiry is important due to the potential for error during memory encoding and retrieval, and the effect of memory accuracy on judgment (Moeckel 1990; Choo and Trotman 1991; Libby 1995; Tan 1995). Therefore, I identify and examine two factors likely to affect auditor memory accuracy of, and judgments resulting from, audit evidence presented in a client inquiry.

The first factor is encoding style, which represents how much stimuli an individual takes in before nonconsciously applying schemata to assist with interpretation and encoding of stimuli to memory (Lewicki 2005). Encoding style is a low-level cognitive function that differs among individuals with similar experience levels and results in observable outcomes including memory accuracy (Gill 2000; Osicki 2002; Lewicki 2005; Dehon, Laroi, and Van der Linden 2011). Individuals fall on a continuum from a more internal encoding style to a more external encoding style (Gill 2000); an individual with a more internal (external) encoding style is quick (slow) to initiate schemata. In the client inquiry context, encoding style represents how much information an auditor perceives from an inquiry before initiating schemata developed from prior inquiry experience and accounting knowledge to process and understand the information. Differences in auditors’ encoding style may explain variance in memory accuracy of evidence gathered from a client inquiry, because the timing of schemata initiation will likely affect the information noticed during the inquiry. Therefore, while auditors with different experiences have different schemata (Gibbins 1984; Libby and Frederick 1990; Choo and Trotman 1991), using encoding style to examine how quickly auditors begin to rely on schemata to interpret new experiences and audit evidence may allow researchers to further understand auditor memory accuracy and judgment.

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4 Schemata are mental structures people use to organize their knowledge and influences the information noticed and remembered (Gibbins 1984; Waller and Felix 1984; Choo and Trotman 1991).
5 For example, during an inquiry, an auditor with a more internal encoding style may quickly initiate schemata leading him or her to infer information details based on prior inquiries, while an auditor with a more external encoding style may gather more details from the current inquiry before initiating schemata.
A second factor that may affect auditor performance of client inquiries is note taking. In practice, auditors often make hand-written or typed notes during client inquiries, and subsequently review the notes to assist with memory and documentation (Godwin 1979; Leinicke, Ostrosky, Rexroad, Baker, and Beckman 2005). Both taking and reviewing notes affect memory accuracy, yet findings are mixed regarding whether the effect is positive or negative (Fisher and Harris 1973; Aiken, Thomas, and Shennum 1975; Einstein, Morris, and Smith 1985). Note taking may improve later memory accuracy by encouraging deeper information processing during encoding and by providing retrieval cues in the form of an external record of information gathered (Fisher and Harris 1973). Contrarily, note taking may hinder encoding by consuming cognitive resources, reducing the note taker’s ability to pay attention to the speaker (Piolat, Olive, and Kellogg 2005), or by limiting the note taker’s memory retrieval to only notes content (Aiken et al. 1975; Einstein et al. 1985). Whether note taking and review improves or hinders auditor memory accuracy of a client inquiry is an empirical question not examined in the accounting literature.

To address these issues, I first gathered interview evidence from six very-experienced auditors to determine: auditors’ methods for obtaining quality evidence from client inquiries, firm expectations of auditor note taking during client inquiries, and the extent of training auditors receive specific to conducting client inquiries. I then developed and executed an experiment to investigate whether encoding style and note taking affect auditor memory accuracy of, and audit judgments resulting from, a client inquiry. I measured participants’ encoding style with the Encoding Style Questionnaire (ESQ, Lewicki 2005) and designed a 2x2 (nested) between-subjects experiment containing two note taking conditions with two subsequent note review conditions nested within the note taking condition. To simulate the cognitive complexity of an
actual client inquiry, participants watched a video of a hypothetical client discussing account activity for the fiscal year under audit, and, prior to the video, were prompted to develop a follow-up question during the inquiry. I measured memory accuracy with participants’ performance on a free recall task without cues (Tan 1995) and a recognition task involving cues (Moeckel 1990). I measured participants’ judgments of probability of misstatement in the account (Hirst 1994a), reasonableness of client explanation (Peecher 1996), and selection of corroborating procedures (Liu 2012). I executed the study with 33 professional auditors, and 23 masters-level accounting students, and 47 undergraduate-level accounting students.

This study makes several contributions to audit practice and academic literature. First, the interviews provide evidence about auditor performance of client inquiries in practice including training, preparation, performance, and documentation. Second, encoding style extends the understanding of auditor usage of schemata in task performance. Not only does the existence of schemata affect performance, as supported by prior research, I find that quickly accessing schemata during an inquiry results in greater memory accuracy compared to conservatively accessing schemata. Third, note taking during client inquiries is common in practice because of auditors’ anecdotal expectations of benefits, often without considering the potential negative effects of note taking. The current study provides empirical evidence that taking and subsequently reviewing notes hinders auditor memory accuracy compared to not taking notes, contrary to expectations in practice and academia. Fourth, although memory accuracy varies among auditors and affects auditor judgment (Moeckel 1990; Libby 1995), no prior research examines factors affecting auditor memory accuracy of and judgments resulting from client inquiries. The current study improves understanding of how well auditors gather and utilize evidence from client inquiries, a common but important audit task. Finally, this is the first study
to examine encoding style in a “real-world” professional application, furthering the understanding of this cognitive function. Most encoding style research examines correlations between encoding style and student participant performance on abstract tasks (Gill 2000; Dehon et al. 2011). No prior study examines whether encoding style correlates with performance in such an information-robust environment, which likely explains the contradiction between my findings and prior research.

The remainder of this dissertation is organized as follows. Chapter 2 provides a literature review over auditor performance of client inquiries, auditor memory, encoding style, and note taking. This chapter also includes development of hypotheses. Chapter 3 describes the design and results of interviews with audit practitioners. Chapter 4 describes the research methodology and experimental instrument employed in this dissertation. Chapter 5 presents the analysis and results. Finally, Chapter 6 presents conclusions from the dissertation.

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6 Student performance on abstract tasks may not generalize directly to a professional application because schemata utilized by students in abstract tasks develop through repeated performance of a specific task in a controlled environment. Contrarily, schemata utilized by professionals develop over time in an uncontrolled environment through various work experiences and training.
CHAPTER 2
LITERATURE REVIEW

In this chapter, I first review the background literature on client inquiries and auditor memory. I then review the literature and develop hypotheses for the influence of encoding style and note taking on auditor memory of, and judgments resulting from, a client inquiry.

Client Inquiries

Professional Guidance, Definition, and Nature of Client Inquiries

Inquiry is a fundamental audit procedure for gathering audit evidence. The third generally accepted auditing standard of fieldwork states, “sufficient appropriate evidential matter is to be obtained through inspection, observation, inquiries, and confirmations to afford a reasonable basis for an opinion regarding the financial statements under audit,” [emphasis added] (AU 150.02, PCAOB 2001). The PCAOB defines inquiry as “seeking information from knowledgeable persons in financial or nonfinancial roles within the company… [inquiries] may range from formal written inquiries to informal oral inquiries” (AS 15.17, PCAOB 2010a). An informal oral inquiry often consists of an auditor having a face-to-face discussion with client personnel, typically in accounting and/or upper-management (Hirst and Koonce 1996; Trompeter and Wright 2010). For this dissertation, and following the PCAOB, I define client inquiry as auditor performance of an informal oral inquiry of client personnel to obtain evidence during an audit engagement.

Client inquiry is a significant part of audit tasks including: updating understanding of a client (AS 9, PCAOB 2010d), audit planning (AS 12, PCAOB 2010c), internal control walkthroughs (AS 12, PCAOB 2010c), testing internal controls (AS 5, PCAOB 2007), risk assessment (AS 12, PCAOB 2010c), substantive analytics (AU 329, PCAOB 2010b), and fraud
procedures (SAS 99, AICPA 2002). Wright and Ashton (1989) refer to client inquiries as “attention-directing procedures” because information obtained during inquiries directs auditors’ attention to specific areas of a client’s financial statements. In this way, conclusions reached from inquiries affect other decisions related to the audit (AS 15, PCAOB 2010a). Therefore, obtaining appropriate, accurate information from client inquiries is vital to the quality of evidence gathered, which may affect the design and performance of later audit procedures (Godwin 1979).

An auditor usually initiates a client inquiry related to a specific audit area or task. During a client inquiry, an auditor poses a series of questions to gather information related to an accounting or auditing objective, and asks follow-up questions as necessary (Lee and Welker 2007). Auditors have the complex cognitive task of listening carefully to the client’s message, while simultaneously evaluating information relevance, encoding relevant information to memory, and formulating appropriate follow-up questions as necessary (Lee and Welker 2007). Adding to the complexity, auditors may take notes during inquiries to assist with later retrieval and documentation (Gamble 2013). Client inquiries are not audio- or video- recorded in practice, making accurate obtainment of evidence from an inquiry crucial. Once completed, there is no opportunity to review or re-observe the inquiry exactly as it occurred. As such, an auditor’s memory and notes provide the primary bases from which to retrieve and evaluate the information presented in a client inquiry.

Empirical Research on Auditor Usage of Client Inquiries

Several studies examine auditor usage of client inquiries in practice (Hylas and Ashton 1982; Wright and Ashton 1989; Trompeter and Wright 2010; Bennet and Hatfield 2013). Hylas and Ashton (1982) and Wright and Ashton (1989) utilize financial statement errors from actual
audits to determine which audit procedures lead to error identification. In both studies, the authors survey audit personnel at the then Big 8 firms, asking participants to list financial statement errors from actual engagements along with the audit procedure that identified the error. Hylas and Ashton (1982) examine 281 errors from 152 audits, finding that client inquiries detected 8 percent of the errors in the study, a finding relatively stable across client sizes. Also, client inquiries discovered three of the ten largest errors in the study. Hylas and Ashton conclude that client inquiries contribute to finding errors in two ways: by directly finding errors and by improving chances of finding errors during tests of details due to information obtained through inquiries.

Wright and Ashton (1989) examine 368 proposed adjustments from 186 engagements, finding that client inquiry identified 13.3 percent of errors in their sample, with averages of 12.8 percent, 17.9 percent, and 10.7 percent, for small, moderate, and large errors, respectively. Within client inquiry, 40 percent of errors were identified during work on a specific audit area and 50 percent were identified through casual conversation, while only 3 percent were identified through inquiry based on standard audit questionnaires. The findings of these studies highlight that auditors do gather important evidence from inquiries, as well as the need for auditors to gather evidence by asking appropriate questions beyond standard pre-fabricated questionnaires.

Two case studies survey audit personnel about their usage of analytical procedures (Trompeter and Wright 2010) and client inquiries (Bennett and Hatfield 2013). Trompeter and Wright (2010) interview 36 auditors from Big 4 firms about analytical procedures. Interviewees report that analytical procedures are conducted primarily by staff and seniors, 48 percent and 35 percent, respectively. Wright and Ashton (1989) asked auditors to provide the four largest proposed adjustments from selected audits, whether booked or waived. Adjustments were limited to those equal to or larger than 20 percent of planning materiality. Small is greater than or equal to .2x materiality, but less than materiality. Moderate is greater than or equal to materiality, but less than 2xmateriality. Large is greater than or equal two 2xmateriality.
percent of the time, respectively, with less being done by managers and partners. Interviewees also report that client inquiry is the most frequently utilized source for an explanation of unexpected differences in accounts, with only 69 percent of the interviewees indicating that they later seek independent supporting information regarding inquiries. If auditors utilize evidence obtained from client inquiries without seeking corroborating evidence, then examining how accurately auditors obtain and evaluate information from client inquiries is important.

Bennett and Hatfield (2013) interview 28 staff-level auditors from international, national, regional, and local firms. The authors find that staff and senior auditors conduct client inquiries on almost a daily basis during fieldwork, with 86 percent of respondents stating they interact with client management three or more days in a typical workweek (Bennett and Hatfield 2013). Additionally, respondents state that interactions with client management occur 2.5 times on average per day, per auditor (Bennett and Hatfield 2013, p. 35). This finding shows the ubiquitous use of client inquiries during a financial statement audit.

Altogether, the studies examining auditor usage of client inquiries in practice supports that inquiries are completed routinely by less experienced auditors (Trompeter and Wright 2010; Bennet and Hatfield 2013). Client inquiry is an important procedure for gathering useful evidence directly from management, and identifying financial statement errors (Hylas and Ashton 1982; Wright and Ashton 1989).

**Empirical Research on Performance of Client Inquiries**

Research on auditor performance of client inquiries primarily examines client inquiries as part of other audit tasks such as analytical procedures (Green 2004, 2005; Hirst 1994a, 1994b; Koonce 1992, 1993; Wright and Berger 2011), fraud interviews/deception detection (Lee and Welker 2007, 2008, 2010, 2011), or inquiry planning (Liu 2012; Bennett and Hatfield 2013). In

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8 Staff-level auditors are professionals with up to two years of audit experience. Senior auditors were not surveyed.
most of these studies, the research focus is participants’ evaluation of evidence provided by management as the result of an inquiry, rather than the inquiry process itself.\textsuperscript{9} Specifically, the studies provide participants with text-based write-ups of managements’ explanations, informing participants that the explanations were obtained from inquiry. While auditor evaluation of management-provided evidence is an important step in the client inquiry process (AS 15, PCAOB 2010a), providing participants with managements’ explanations in a text-based format circumvents the process of obtaining information directly from management through inquiry. Missing from consideration in these studies is the question of whether participants would gather the same quality of information from personally performing a client inquiry as that included in the text provided them.

A few exceptions to the prior research include Lee and Welker (2007, 2008, 2010, 2011), Gamble (2013), and Bennett and Hatfield (2013), which utilize methodologies other than providing management explanations in a text-based format. In a series of studies examining deception-detection related to fraud inquiries, Lee and Welker utilize video-based and in-person methodologies. In two studies of fraud inquiries, participants observe videos of fraud interviews and attempt to detect deception by the interviewee (Lee and Welker 2007) or judge suspicious behaviors of the interviewee (Lee and Welker 2008). The authors intentionally chose for participants to play the role of observer rather than interviewer, to reduce the cognitive difficulty

\textsuperscript{9} Auditors’ evaluation of management-provided evidence is influenced by many attributes and contexts including the source of audit evidence (Anderson, Koonce, and Marchant 1994; Anderson, Kadous, and Koonce 2004; Goodwin 1999; Haynes 1999; Hirst 1994a; Hirst 1994b; Rebele, Heintz, and Briden 1988; Bennett and Hatfield 2013), attributes of auditors (Joyce and Biddle 1981; Gold, Hunton, and Gormaa 2009; Lee and Welker 2010, 2011), auditor decision-making processes (Knechel and Messier 1990; Koonce 1992; Haynes 1999) and timing of information receipt (Green 2004, 2005). Attributes of the source of audit evidence include management integrity (Goodwin 1999), competence (Anderson et al. 1994; Hirst 1994a), incentives (Hirst 1994b; Anderson et al. 2004), objectivity (Hirst 1994a), experience (Bennett and Hatfield 2013), and expertise (Rebele et al. 1988). Auditor attributes include familiarity with the client (Lee and Welker 2010, 2011), gender (Gold et al. 2009), and organization of audit evidence (Wright and Berger 2011). Auditors’ decision-making processes include sequential evidence investigation (Knechel and Messier 1990), belief perseverance (Koonce 1992), and cascaded-inference of reliability and diagnosticity (Haynes 1999).
of performing an interview. In two studies of deception-detection in financial statement fraud interviews, two student participants within a dyad interview each other in truth telling and lying scenarios over a number of weeks (Lee and Welker 2010, 2011). The authors investigate whether prior experience with an interviewee’s truth telling or deception influences deception-detection. Limitations of these four studies include participants’ lack of familiarity with the topic matter (real estate listings) and fellow students serving as interviewees, both of which may be confounding variables in the studies by affecting deception attempts by interviewees and deception detection by observers. While utilization of different methodologies to examine client inquiries is a contribution of these studies, they each examine auditor detection of deception in a specific type of inquiry, rather than auditor acquisition of evidence from a client inquiry.

Gamble (2013) examines whether presentation modality of a client inquiry affects auditors’ source monitoring and evidence reliability judgments. Professional auditor participants took on the role of an in-charge senior receiving evidence from two hypothetical staff-level audit team members. The staff-level auditors had obtained different information from the client through inquiry. Gamble manipulates the source credibility of the two staff auditors as either having high or low credibility, operationalized by varying the auditors’ amounts of audit experience. Gamble manipulates presentation modality through the mode that the two staff auditors present evidence. In the visual modality condition, both staff auditors present evidence in a visual format, which is text-based. In the mixed condition, the first staff auditor presents evidence in a visual format while the second staff auditor presents evidence in an auditory format. Gamble finds that a mixed modality improves source-monitoring accuracy, and that high

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10 Presentation modality refers to the method or sense through which the auditor perceives the evidence, and may be visual only, auditory only, or mixed (Gamble 2013). Gamble assigns participants to visual or mixed experimental conditions. Source monitoring is defined as whether a participant can attribute information back to the correct source of the information (Gamble 2013).
source monitoring accuracy improves evidence reliability judgments. A limitation of this study is that participants did not inquire with a client, but rather a fellow audit team member.

Bennett and Hatfield (2013) use a face-to-face methodology to examine the effect of social mismatch between less-experienced staff-level auditors and more-experienced client personnel on auditors’ information follow-up requests. Social mismatch is the perceived difference in age and knowledge between an auditor and client. Student participants, completing an accounts receivable confirmation task, have face-to-face interactions with a confederate acting as controller at the client. Participants experience one of three controller characteristics conditions: an experienced, older controller making intimidating statements; an experienced, older controller not making intimidating statements; and a less experienced, younger controller not making intimidating statements. Participants are divided into one of two potential follow-up conditions: follow-up by face-to-face inquiry, or follow-up by e-mail inquiry. Participants decide whether to follow-up with the controller for more information. Results suggest participants judge interacting with the experienced, older controller as an intimidating situation, so much so that the intimidating statements manipulation is not significant. Controller experience, mode of follow-up, and the interaction of these significantly affect participants’ follow-up decision. This study makes a significant contribution to the client inquiry literature by finding that face-to-face interactions with clients affect auditor decision-making. However, the authors do not examine evidence obtained from inquiries by auditors.

Early in this stream of research, Wright and Ashton state, “Little is known about the nature of auditors’ verbal inquiries,” (1989, p. 711). Additionally, Hirst and Koonce (1996) encourage utilization of audio or video to examine client inquiries due to limitations of paper and pencil studies. However, little research has been done to address either of these concerns.
Gamble (2013) and Bennett and Hatfield (2013) show that presentation mode influences participant judgment in a client inquiry task by providing information beyond which can be transmitted in a text-based format. While client inquiries in practice can be text-based (e-mail) or auditory (phone call), they are predominantly face-to-face interactions (Bennett and Hatfield 2013), involving a combination of visual and auditory modalities without a text-based transcript available. No prior research examines auditor acquisition of audit evidence through client inquiry. Therefore, my primary purpose in this dissertation is to address this gap in the literature by examining auditors’ ability to accurately acquire information from management in a client inquiry, using a video-based methodology.\textsuperscript{11}

Auditor Memory

Financial statement auditing requires professional judgments utilizing specialized knowledge and expertise, similar to other professions such as law or medicine. Auditors’ accumulated knowledge and experiences are stored within long-term memory; therefore, the study of memory is an important aspect of understanding auditor judgment and decision-making research.\textsuperscript{12} It is specifically relevant to this dissertation because performing a client inquiry requires an auditor to obtain evidence from an inquiry, store the evidence in memory, and utilize prior knowledge also stored in memory to evaluate the evidence. This process then results in making a judgment of the client inquiry evidence. Academic research of auditor memory is a robust literature that begins with understanding determinants of expertise, progresses into mature theory of auditor memory, and examines the interactions of memory with context and task. In

\textsuperscript{11} See Chapter 4 for a detailed discussion of the research methodology of this dissertation.

\textsuperscript{12} Memory can be designated as short-term or long-term. Short-term memory, also known as working memory or cognitive work space (Moeckel 1990), is information content available for cognitive processing at a given instant and has a very limited capacity (Waller and Felix 1984). Information in short-term memory will usually be forgotten within 20 seconds, even with rehearsal (Peterson and Peterson 1959). Long-term memory consists of information maintained for a significant duration without rehearsal or activation (Waller and Felix 1984). Long-term memory is not considered to have a maximum capacity. Information may be retrieved from long-term memory to assist with processing, problem solving, or learning. In this dissertation, any reference to memory refers to long-term memory.
this section, I review the literature on determinants of expertise, followed by research on schemata in auditor memory, and finally auditor memory in various tasks.

Determinants of Auditor Expertise

The foundation of auditor memory research is the auditor expertise literature, which focuses on whether auditor judgment improves with experience (Ashton and Brown 1980; Hamilton and Wright 1982; Messier 1983). These researchers rely on a general expectation that audit work experience increases auditor expertise, which improves judgment stability across tasks and consensus among experienced auditors. Hamilton and Wright state, “A major assumption here is that a primary determinant of improved expertise in an area of expert judgment is experience,” (1982, p. 757). I discuss a few articles from this line of research below; however, this early research contains conflicting results due to the lack of theoretical development regarding knowledge and experience (Bonner 1990).

In a series of extensions of earlier studies on identification of internal control cues, Ashton and Brown (1980) and Hamilton and Wright (1982) include experience as a predictor of auditor judgment insight, stability, and consensus. Ashton and Brown (1980) find that judgment insight and judgment consensus among auditor participants increases with years of audit experience, but find little variance between auditors within the one-to-three-years of experience category. Hamilton and Wright (1982) group auditor participants into experience categories of no experience, up to three years of experience, and more than three years of experience. The authors find a positive correlation between years of experience and self-insight about judgments made, but also find a negative correlation between years of experience and judgment consensus, conflicting with Ashton and Brown (1980). The authors conclude that auditor knowledge and experience may have a greater effect in less-structured tasks compared to the structured tasks
previously used in research. Messier (1983) responds by examining the effects of experience on
judgment in a less-structured task, materiality/disclosure judgment by audit partners. He finds
that experience and firm type (Big 8 or non-Big 8) improves consensus, concluding that the
effects of experience emerge in less-structured tasks, in agreement with Hamilton and Wright’s
(1982) supposition.¹³

These studies develop a foundational belief that experience affects auditor judgment and
performance. To further this foundational relationship, theoretical underpinnings of knowledge
had to be advanced, which I discuss in the next section.

Auditor Experience and Schemata

In a groundbreaking study, Weber (1980) posits that differences in auditor memory likely
explain the lack of consensus among auditor judgment found in prior research. Weber further
posits that auditor judgment results from a pattern-matching process between the experimental
stimuli and cues existing in auditor memory. If auditors have different memory structures based
on experience, and auditor judgment is reliant upon memory and its structure, then judgments
based on memory structures will differ between auditors. In his study, Weber has auditor
participants perform a free recall of a list of fifty computer control types, and he then examines
whether this recall indicates auditors cluster (or group) items together in memory. Weber finds
some consensus does exist in how auditors organize computer control cues in their memory but
that experience or auditor position in the firm does not predict clustering.

Following Weber (1980), Gibbins (1984) advances the usage of schemata theory in
accounting research by forming propositions about the cognitive actions that form professional

¹³ Messier (1983) considers a materiality/disclosure decision to be less structured and occur less often than a task
such as judging internal controls of a payroll system. The materiality/disclosure decision involves judging the
materiality of an inventory writedown and the probability the writedown should be separately disclosed (Messier
judgments. These cognitive actions include utilizing “pre-existing systems of schematized and abstracted knowledge” (Gibbins 1984, p. 107), known as schemata, that guide judgment. An auditor’s prior experiences, both direct and indirect, help to structure his or her knowledge by relating concepts with definitions, ideas, processes, and experiences. Subsequently, these knowledge structures (schemata) allow an auditor to understand and apply complex ideas such as materiality to new situations without having to re-learn the term over and again. In support of prior research, Gibbins concludes that the more an auditor gains direct and indirect audit experience, the more developed an auditor’s schemata will become, thereby allowing an experienced auditor to make more informed, intuitive judgments than a less experienced auditor. Gibbins adds that, based on observation, the public accounting environment provides so much pressure that the opportunity to take time for conscious analysis is limited, leading auditors to make more judgments based on their preexisting knowledge and experience rather than solely based on facts of the current situation. Thus, schemata are a primary determinant of expertise in the audit literature.

Developing Auditor Schemata

A series of studies examines how audit experience develops schemata (Libby 1985; Butt 1988; Libby and Frederick 1990; Ashton 1991). These studies focus on auditors’ judgment of frequencies of financial statement errors. Libby (1985) relies on spreading activation theory (Collins and Loftus 1975) to predict and find that auditors acquire information about the frequency and recency of errors through experience, and store this information in memory. Libby and Frederick (1990) extend Libby (1985) by finding that more experienced auditors exhibit

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14 Schemata are knowledge structures based on prior experiences that organize declarative, semantic, and procedural knowledge (Gibbins 1984; Waller and Felix 1984; Choo and Trotman 1991).
more complete knowledge of financial statement errors than less experienced auditors by generating a greater number of accurate explanatory hypotheses.

Butt (1988) extends Libby (1985) by using memory trace theory (Hintzman, Nozawa, and Irmscher 1982) to explain how memories are added to schemata: a new, separate memory trace is stored each time a financial statement error is experienced directly. The more frequently an error is experienced, the more memory traces that error develops over time, which makes the error more likely to be recalled. Butt operationalizes direct experience by having participants see an error multiple times, and operationalizes indirect experience by having participants only be told how frequently an error occurs. Butt finds that only direct experience, but not indirect experience, improves auditor judgment.

Ashton (1991) reconsiders and extends Libby (1985), Butt (1988), and Libby and Frederick (1990) by finding that auditors actually have very little first hand experience with financial statement errors due to the rarity of errors in actual audits. Ashton finds that auditors tend be aware of only the most frequently occurring errors from practice, and finds that accuracy and consensus are not related to experience, thus challenging the practice implications of the previous findings. While the practical findings of Libby (1985), Butt (1988), and Libby and Frederick (1990) regarding auditor knowledge of financial statement errors may be artifacts of the respective cases, the advancement of schemata theory made by the three studies should not be disregarded. Auditors do appear to store memories in schemata in the form of memory traces gained through direct experience, and activate those memories through spreading activation among related schemata.

In prior studies, a common proxy for audit experience is the number of years or months an auditor has been in practice. Bonner (1990) and Bonner and Lewis (1990) suggest task-
specific experience as a more accurate predictor of performance than the years or months an
auditor works. Extending prior research, Bonner (1990) finds that task-specific experience builds
task-specific knowledge, improving auditor performance. Bonner and Lewis (1990) posit three
categories of knowledge: general domain knowledge, subspecialty knowledge, and world
knowledge. General domain knowledge is knowledge generally learned by all auditors through
education and basic audit experience. Subspecialty knowledge is learned through task-specific
experience gained working on a particular industry or performing specific audit tasks. World
knowledge is learned through life experience. Bonner and Lewis find that auditor performance
on specific knowledge tests, combined with participants’ innate problem-solving ability, explains
more variance in auditor performance than number of months working or job title.

In summary, auditors develop audit related schemata through direct, general, and task-
specific audit experience. Using auditor experience to predict performance will vary in accuracy
dependent upon an auditor’s specific experiences and the task to be performed.

Using Auditor Schemata

The prior research discussed in the last section establishes that auditors build schemata
over time through specific experiences. A series of studies provide theory and empirical evidence
explaining auditors’ use of schemata while performing audit tasks and making judgments
(Plumlee 1985; Frederick and Libby 1986; Moeckel and Plumlee 1989; Moeckel 1990; Moeckel
1991; Choo and Trotman 1991). The importance of this series of studies relates to how
knowledge from an auditor’s schemata interacts with evidence from a stimulus.

Plumlee (1985) relies on the theory of mental representation (Newell and Simon 1972) to
explain that when facing a problem, auditors form a mental representation of the problem
utilizing schemata and facts from the stimuli. Plumlee finds that this mental representation of the
problem, along with a suggested solution, becomes part of an auditor’s schemata related to the internal control system. Auditors use these mental representations in schemata to identify strengths and weaknesses of similar internal control systems. Similarly, Frederick and Libby (1986) find that auditors use knowledge of internal control systems to develop a predictive probability of account error outcomes from internal control system weaknesses. Experienced auditors exercise feature matching where schemata interact with case stimuli to identify probabilities. Experienced auditors are more accurate at identifying event probabilities than students due to auditors’ use of schemata, which contains more knowledge of internal control outcomes than students’ schemata.

Using schemata does not result in superior performance in all tasks or across levels of experience. In this regard, Moeckel (1990, 1991) are important studies in advancing schemata theory in audit research. In both studies, Moeckel uses an audit work paper review task to examine how experience affects two types of memory errors: failure to integrate and reconstruction. Reviewing work papers requires an auditor to remember evidence examined in prior work papers when evaluating subsequent work papers. Moeckel posits that experience should facilitate the acquisition and utilization of evidence. As an auditor experiences evidence that is consistently related to other pieces of evidence or outcomes, linkages between evidence within schemata should become stronger and the schemata more elaborate. As an auditor’s schemata becomes more developed and elaborate, cognitive resources should be freed during encoding to allow for better integration of new evidence (Moeckel 1991). Alternatively, with elaborate schemata comes the chance that an auditor fails to integrate evidence or experiences a reconstruction error. A failure to integrate or reconstruct evidence is hazardous to auditor

15 “Failure to integrate is defined as failure to make mental connections between separately received pieces of information; reconstruction is defined as altering the mental representation of information to make it consistent with existing knowledge (or memories),” Moeckel (1990, p. 368).
performance since Moeckel and Plumlee (1989) find that auditors are overconfident in their memory accuracy and will potentially utilize incorrect memories to interpret current audit evidence. Moeckel (1990) examines auditor participants’ performance on a recognition task and finds that integration errors and reconstruction errors occur with auditors at all levels of experience: less experienced auditors are more likely to have integration errors than experienced auditors, while experienced auditors are more likely to have reconstruction errors than less experienced auditors. Experienced auditors’ more elaborate schemata led to under-processing of incoming evidence and the use of expectations rather than actual observations, resulting in instances of reconstruction.

Choo and Trotman (1991) establish a summarizing framework for auditors’ use of schemata in information processing and judgment. The basic framework is: (1) schemata allow for grouping and ordering of observations; (2) organization of schemata varies with experience; (3) schemata determine the information encoded and retrieved from memory; and (4) schemata influence subsequent recall of information, including inferences (Choo and Trotman 1991, p. 466). Choo and Trotman find support for this framework through a series of experiments comparing experienced and inexperienced auditors’ recall of evidence. Experienced and inexperienced auditors differ in the amounts, type, and clustering of items recalled. Additionally, experienced auditors’ organization of memory influences inferences.

Moeckel and Plumlee (1989), Moeckel (1990), and Choo and Trotman (1991) are the first studies to examine auditor memory by asking auditors to retrieve case information from memory. There are two general types of retrieval: recall and recognition (Moeckel and Plumlee 1989). Recall occurs when a person retrieves information from long-term memory without

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16 Choo and Trotman (1991) also mention an implicit assumption in research that a relationship exists between items recalled and judgments made (p. 466). However, they find no support for this relationship in their results.
assistance from external cues (Choo and Curtis 2000). Recognition occurs when a person matches external cues to information stored in long-term memory (Moeckel and Plumlee 1989). Memory accuracy is often defined in accounting research in terms of an outcome of recall or recognition tasks, by comparing retrieved memories to case facts (Tan 1995; Ricchiute 1998; Sprinkle and Tubbs 1998). For this dissertation, I define memory accuracy as memories that, when retrieved, are accurate to the target fact, event, or experience.

Auditor Schemata in Context

Research following Choo and Trotman (1991) has seen incremental gains in understanding usage of memory in various contexts (Libby and Lipe 1992; Libby and Trotman 1993; Kida and Smith 1995; Tan 1995; Ricchiute 1998, 1999; Sprinkle and Tubbs 1998; Curtis and Davis 2003; Lindberg and Maletta 2003; Fuller and Kaplan 2004; Grossman and Welker 2011). Contexts examined in research include the work paper review process (Libby and Trotman 1993; Tan 1995; Sprinkle and Tubbs 1998; Ricchiute 1998, 1999), whether monetary incentives affect memory (Libby and Lipe 1992), the existence of memory conjunction errors in multiple client environments (Lindberg and Maletta 2003; Grossman and Welker 2011), developing knowledge structures (Curtis and Viator 2000; Curtis and Davis 2003; Borthick, Curtis, and Sriram 2006), and memory of numerical evidence (Kida and Smith 1995). Each of these studies makes a unique contribution to the auditor memory literature, but does not significantly alter the foundational role of schemata in auditor judgment and decision-making.

In summary, auditors work in a high pressure, professional environment (Gibbins 1984) that requires knowledge and expertise in making difficult judgments. Direct, task-specific audit experience develops schemata (Butt 1988; Bonner 1990; Bonner and Lewis 1990) that auditors use to efficiently process audit evidence and make appropriate judgments (Frederick and Libby...
While schemata promote efficiency in gathering evidence, these elaborate knowledge structures can lead to errors in recollection and usage of audit evidence (Moeckel 1990, 1991; Moeckel and Plumlee 1989).

Encoding Style

As discussed in the previous section, auditors have extensive schemata, developed through general and task-specific audit experience. Auditors regularly conduct client inquiries (Bennett and Hatfield 2013), and, over time, likely develop schemata related to client inquiries. Cognitive processes that utilize an auditor’s robust schemata and control the encoding of information to long-term memory are likely to affect the information noticed and remembered from a client inquiry. Encoding style is a low-level cognitive function that determines how quickly individuals access schemata when perceiving stimuli, and results in observable outcomes including memory accuracy (Gill 2000; Osicki 2002; Lewicki 2005). Therefore, I examine whether encoding style affects auditor memory accuracy of a client inquiry. In this section, I discuss the literature on encoding style and develop hypotheses regarding the effect of encoding style on auditor memory accuracy.

Development of Encoding Style

“The general law of perception, which is this, that whilst part of what we perceive comes from our senses from the object before us, another part (and it may be the larger part) always comes out of our own head,” (James [1890] 1983, p. 747). The human mind’s acquisition, encoding, and retrieval of information to and from memory is a matching process between perceived features of a stimuli, and expectations and past experiences within the mind (Lewicki 2005). Lewicki posits that, for a cognitive system to encode information, data must be processed and stored in terms of covariation: covariation between characteristics of an item (e.g. a cardinal
has wings) and covariation between characteristics of separate but related items (e.g. cardinals and blue jays both have wings and are both birds) (Lewicki 1986). This covariation assumption is similar to a global assumption of the spreading activation theory of schemata developed by Collins and Loftus (1975). Collins and Loftus state, “The conceptual (semantic) network is organized along the lines of semantic similarity. The more properties two concepts have in common, the more links there are between the two nodes via these properties and the more closely related are the concepts,” (1975, p. 411). These covariations, or semantic similarities, are a basic formal structure for representing both declarative and procedural knowledge, and are strengthened through continued experience (Lewicki 1986).

The aforementioned covariation structure applies not only to consciously acquired knowledge, but also to nonconsciously acquired and nonconsciously operating knowledge (Lewicki 1986; Lewicki, Hill, and Czyzewska 1992). Lewicki defines nonconscious knowledge as “Cognitive contents and processes that a person cannot become aware of simply by directing his or her attention to them, even when the person is motivated to access that content or process,” (Lewicki 1986, p. 31). For example, if asked by a non-native speaker why specific words were selected or sentences were structured in certain ways, a native speaker is often unable to explain exactly what language rules he or she is applying, or recall when the specific language rules were learned (Lewicki 1986). A native-language speaker’s nonconscious mind quickly and efficiently utilizes knowledge of language rules and word definitions to generate appropriate sentences without the need to consciously think through each individual word choice, definition, and

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17 The concept of the ‘nonconscious’ mind in this research and my dissertation is distinct from the ‘subconscious’ or ‘unconscious’ mind conceptualized in early psychoanalysis research by Sigmund Freud and others. These early researchers conceptualized the subconscious as a repressed consciousness of unfulfilled desires and expectations influencing an individual’s behavior, although not in the individual’s consciousness (Freud 1910). This contrasts with nonconscious, which is conceptualized as a series of ‘automatic’ processes within the mind. These processes utilize memories, declarative knowledge, and procedural knowledge to assist with cognitive processing and understanding stimuli in the world around an individual.
sentence structure. The nonconscious mind operates so quickly that a native-language speaker often speaks continuously without stopping to consciously generate each desired word or sentence structure. This example of nonconscious knowledge acquisition and utilization is shown most clearly in a child’s ability to form complete sentences using appropriate structures without being able to explain language rules, and before experiencing any formal learning of his or her native language. Recognizing faces and making unstructured judgments are other examples of nonconscious processing of information in everyday life, which people are able to perform effectively without always being able to explain how it was performed (Lewicki 1986).

Lewicki (1986) develops a theoretical category denoting a function of nonconscious processes called internal processing algorithms, also known as encoding algorithms, encoding rules, or encoding biases (Lewicki, Hill, and Sasaki 1989; Hill, Lewicki, and Czyzewska 1989; Lewicki et al. 1992; Lewicki 2005). I will refer to this concept as encoding rules for the remainder of this dissertation, as this is the more prominent name in research. Encoding rules refer to memory representations of covariation between two or more features or events, and translate objective stimuli into subjectively meaningful impressions and interpretations (Lewicki, Czyzewska, and Hill 1997). Every stimulus that is about to be stored in memory is encoded according to some pre-existing encoding rule, whether or not existing rules perfectly fit the stimulus (Lewicki et al. 1997). The exact structure of encoding rules within a person’s memory is unknown; however, their existence can be identified through results of an individual’s task performance. Encoding rules are closely related to the concept and function of schemata. Where schemata includes semantic and lexical networks (Collins and Loftus 1975), and represent episodic memory and declarative knowledge (Waller and Felix 1984), encoding rules are thought to provide the basic foundation of procedural knowledge by representing the ‘how to’
understanding of covariations between elements (Lewicki, Hill, and Czyzewska 1994). Encoding rules can represent covariations sometimes too complex for the conscious mind to detect or comprehend (Lewicki et al. 1994). To qualify as an encoding rule, three conditions must be met: it be acquired nonconsciously, it nonconsciously influences behavior, and it not be consciously controlled (Lewicki 1986, p. 29).

A series of empirical studies provide support for the existence of encoding rules using multiple methodologies (Lewicki 1986; Hill et al. 1989; Lewicki et al. 1989); see Appendix A for a discussion of the different methodologies used. Participants in these studies complete simple abstract tasks, for example, attempting to identify placement of a target digit within a matrix of digits viewed for such a short time that content of the matrix cannot be consciously perceived (Lewicki et al. 1989). During a learning phase, participants examine dozens of matrices seeded with a non-salient covariation between placement of the target digit and other characteristics of the matrix. Although participants cannot consciously perceive the covariation, an encoding rule is nonconsciously learned through repetition. A control group examines matrices void of any covariation. This learning phase is followed by a testing phase where participants view dozens more matrices that do not contain the target digit. Participants are asked to guess where the target digit is located based on his or her intuition. Participants in the experimental group score in a way that shows they are applying the learned covariation, the encoding rule. The control group responses during the testing phase do not reflect any learned covariation. In follow-up interviews, participants in the learned covariation group are unable to explain or provide any detail of the covariation they were applying in the testing phase, even when incentivized to do so. Results are that participants nonconsciously learn the non-salient covariations such that accuracy performance improves over time during the testing phase.
Most times, encoding rules created or selected are accurate to perceived stimuli, allowing for efficient and effective interpretation of subsequently encountered stimuli (Lewicki et al. 1997). However, evidence has shown a deficiency in encoding: human memory tends to develop and self-perpetuate encoding rules even when objective, clear evidence of a covariation is not available. Once the mind establishes an encoding rule, that X is associated with Y, then when the perceiver encounters a stimulus that is clearly X but ambiguous regarding Y, the perceiver will likely encode the stimulus as X and Y. For example, person A meets person B who wears glasses (factor X). Person A perceives person B to be intelligent (factor Y). At this point, an encoding rule is established between the covariation of X and Y (that people who wear glasses are intelligent). The self-perpetuation of the encoding rule may occur during subsequent experiences with factor X. If person A meets person C, and person C wears glasses (factor X is present) but does not speak enough to appear intelligent or un-intelligent (ambiguous Y), person A will likely encode person C as being intelligent (encoded as X and Y). The encoding rule is strengthened even when direct supporting evidence was not obtained. Thus, a stimulus can be encoded as consistent with an encoding rule regardless of whether the stimulus actually fit the rule or whether it was inferred to fit the rule due to ambiguity (Lewicki 1986; Hill et al. 1989; Lewicki et al. 1989; Lewicki et al. 1992). People often cannot distinguish between memories of information actually perceived and information inferred (Lewicki et al. 1997; Moeckel 1990), allowing new stimuli to be encoded and later recalled according to an encoding rule even though the encoding rule is not an accurate fit for the stimuli. This provides evidence that nonconsciously acquired encoding rules, and degree of self-perpetuation of those encoding rules, may influence accurate encoding and later retrieval of information.
Research has found that individuals differ in their tendency to self-perpetuate encoding rules, and how quickly they switch between encoding rules (Lewicki et al. 1997). “Individual differences in the tendency to self-perpetuate are at least partially due to how hasty versus conservative are their encoding processes,” (Lewicki et al. 1997, p. 64). Lewicki et al. (1997) posits that these differences are likely caused by a more elementary function in cognitive processing, encoding style. Encoding style represents the amount of direct or indirect evidence available to an individual before an encoding rule is initiated to assist with perception (Lewicki et al. 1997; Lewicki 2005). Individuals fall on a single continuum from internal encoders to external encoders. Internal encoders hastily apply encoding rules to quickly interpret a stimulus, even if a rule does not fit the stimuli well, while external encoders are slower to apply encoding rules (Gill 2000; Osicki 2002; Lewicki 2005). By doing so, internal encoders are less careful, and more likely to conclude he or she perceived something in the environment based relatively more on what they are expecting and relatively less on actual external information, running the risk of type I errors (Lewicki 2005; Herndon 2008). External encoders are more careful, and perceive more information prior to initiating an encoding rule, running the risk of type II errors.

For an example of a type I error in a client inquiry, assume an encoding rule has developed within an auditor’s schemata, that accounts receivable and sales revenue have a

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18 Encoding style differs significantly from mind-set. Mind-set research examines mind-sets to understand individual goal setting and achievement. Two mind-sets include deliberative and implemental, each of which affect the cognitive processing of incoming and stored information (Gollwitzer 1990). A deliberative mind-set maintains an “open-mindedness” towards processing information as an individual is attempting to deliberate between possible actions, such that no bias exists between positive or negative information. An implemental mind-set is cognitively tuned toward information relevant to when, where, and how to act when planning an action. One difference between encoding style and mind-sets is that a mind-set is a “state” variable while encoding style is a “trait” variable. An individual will switch between mind-sets while going through the phases of selecting and implementing an action (Gollwitzer 1990). Additionally, a participant’s deliberative or implemental mind-set may be stimulated by researcher instruction. Contrarily, individuals do not vary or switch between encoding styles, nor can researcher instruction stimulate a specific encoding style (Gill 2000). A second difference is that mind-set is an intentional variable (Gollwitzer 1990) while encoding style is a nonconscious automatic processing variable (Lewicki 2005). “Deliberative and implemental mind-set effects would not occur in the absence of an explicit intention to deliberate an unresolved problem or to plan a chosen project, respectively. So it appears that mind-sets carry more of the qualities of active sets than of passive sets” (Gollwitzer 1990, p. 84).
positive relationship; as sales increase, accounts receivable also increase. The auditor begins an inquiry with a client who states that sales increased during the current year but does not mention that accounts receivable actually decreased. If the auditor has more of an internal encoding style, he or she may quickly initiate the aforementioned encoding rule and infer accounts receivable increased, even if the client does not mention accounts receivable. Upon memory retrieval, the auditor “remembers” that accounts receivable increased, only to discover accounts receivable actually decreased during the year. The auditor will have experienced a type I error by inferring and remembering a relationship between two accounts as present when indeed it was not.

For an example of a type II error, assume the same encoding rule as before, but now the auditor has more of an external encoding style. Additionally, the client’s accounts receivable did increase along with sales. The auditor begins the inquiry and the client states that sales increased during the current year but does not mention that accounts receivable increased. The auditor collects more information from the inquiry prior to initiating the encoding rule; without an activated encoding rule, the auditor will not recognize a relationship between accounts receivable and sales. The auditor may or may not ask follow-up questions to establish the current relationship between accounts receivable and sales. The auditor will have experienced a type II error by not identifying a relationship between two accounts when indeed the accounts were related, possibly asking unnecessary follow-up questions or not asking necessary questions.

Encoding style is measured by a self-report questionnaire developed through a series of studies (Gill 2000; Osicki 2002; Lewicki 2005). Questionnaire scores from multiple studies and participant populations show a normal distribution with most people falling between the extreme internal or external encoder ends. Exploratory research has found significant correlations between encoding style and various outcomes including application of non-salient covariations
in abstract tasks (Gill 2000; Lewicki 2005), decision of career choice (Osicki 2002), mindfulness (Herndon 2008), cognitive failures (Herndon 2008), and susceptibility for false memory recall (Dehon et al. 2011). Encoding style is not reliably correlated with various personality scales including Myers-Briggs Type Indicator or any of the “big five” factors, nor with gender, socioeconomic status, IQ, or other intelligence tests (Gill 2000; Lewicki 2005). This lack of correlation with personality scales provides support that encoding style is a construct distinct from common constructs such as personality or intelligence.

Two studies examine and find encoding style influences memory (Herndon 2008; Dehon et al. 2011). Herndon (2008) examines correlations between encoding style, mindfulness, and cognitive failures. Herndon measures cognitive failures with a self-report questionnaire with four dimensions including memory, distractibility, name forgetfulness, and blunders. Participants scoring as having a more external encoding style are positively correlated with mindfulness and negatively correlated with all four cognitive failure dimensions. This finding supports that an external encoding style is correlated with better cognitive performance, including memory.

Dehon et al. (2011) examines the influence of encoding style on measures of false memories in a word list task. Using a DRM technique, participants read a list of words that are related to a critical word not in the list. Participants then complete a recognition task reviewing a new list of words, this time containing the critical word. Participants note whether or not each

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19 Osicki’s (2002) finding that encoding style is correlated with career choice is not a study of the influence of encoding style on interpretation of stimuli. Rather, Osicki posits that variance among individuals in encoding style may be correlated with a preferred environment such as structure or flexibility. Osicki finds that internal encoders choose less-structured careers such as art, while external encoders choose more structured careers such as engineering. Osicki bases this expectation and finding on internal encoders’ propensity to quickly and flexibly apply encoding rules when gathering information compared to external encoders’ propensity to conservatively apply encoding rules in a more structured manner.

20 The Myers-Briggs Type Indicator personality test measures a cognitive style component. Cognitive style is a trait representing an individual’s preferred method of acquiring and processing information during the problem solving process (Fuller and Kaplan 2004, p. 131). An individual uses his or her preferred cognitive style unless instructed not to do so (Fuller and Kaplan 2004, p. 133). Voluntary use of cognitive style is an important characteristic distinguishing the concept from encoding style, which is a cognitive function not consciously operated.
word in the recognition list has been viewed before. Selecting the critical word as having been viewed previously is judged as a false memory, also known as an injunction error. Participants scoring as having a more internal encoding style are found to have a higher propensity for false memories than participants with a more external encoding style.

Influence of Encoding Style in Auditing

As stated above, encoding rules provide the basic foundation of procedural knowledge by representing the understanding of covariations between elements, covariations sometimes too complex for the conscious mind to detect or comprehend (Lewicki et al. 1994). As professionals gain experience, they nonconsciously gain ‘how to’ information; they know what to look for or how to manage others (Lewicki et al. 1997). Financial statement auditing is a profession requiring extensive ‘how-to’ knowledge of performing audit tasks and identifying relationships and errors among financial statement accounts. I posit that the development of expertise and task-specific knowledge (Bonner 1990; Bonner and Lewis 1990) are highly reliant upon the development of encoding rules within an auditor’s schemata. As an auditor performs more audit tasks, he or she is exposed, whether consciously or nonconsciously, to covariations specific to audit tasks and financial statement accounts, allowing for development and re-enforcement of encoding rules. The presence of these encoding rules assists experienced auditors in performing audits, although auditors cannot exactly seek out this ‘how to’ information in their own knowledge and transfer it to others (Lewicki et al. 1997).

Client inquiry is a ubiquitous task in auditing performed routinely by auditors at all levels (Bennett and Hatfield 2013). By performing multiple client inquiries over time, auditors likely develop encoding rules for client inquiries in general, as well as for specific accounts, audit tasks, or client personnel. A client inquiry is a cognitively complex situation in which an auditor
is attempting to perceive and encode important audit evidence directly from a client. I posit auditors nonconsciously utilize encoding rules to help interpret evidence being perceived in a client inquiry, as a way to manage the cognitive complexity. Thus, an auditor hastily or conservatively initiating encoding rules during an inquiry could influence the evidence he or she notices and remembers. This is similar to Moeckel’s (1990) finding that experienced auditors’ more elaborate schemata lead to under-processing of incoming evidence and the use of expectations rather than actual observations; however, distinct from Moeckel, I posit that schemata’s influence is not simply due to its presence in the mind, but rather how quickly it is accessed during perception, based on encoding style.

Following Herndon (2008) and Dehon et al. (2011), I predict auditors with a more internal encoding style will encode and retrieve less accurate information from a client inquiry than auditors with a more external encoding style. Hastily applying encoding rules to the evidence being perceived, and relying more on internal encoding rules and schemata than on external information, likely will lead auditors with a more internal encoding style to remember inferences rather than accurate details. Contrarily, I predict auditors with a more external encoding style will encode more accurate information from a client inquiry than auditors with a more internal encoding style due to cautiously applying encoding rules to the evidence being perceived, and relying more on external information than internal encoding rules and schemata.

**H1**: Auditors with a more external encoding style will have greater memory accuracy of a client inquiry than auditors with a more internal encoding style.

**Note Taking**

*Note Taking in Education*

Forty years of note taking research supports a foundational theory that note taking during lectures aids learning through two functions: an encoding function and an external storage
function (DiVesta and Gray 1972; Fisher and Harris 1973; Aiken et al. 1975; Einstein et al. 1985; Kiewra et al. 1991; Piolat et al. 2005; Kobayashi 2005). The two functions are thought to work together to aid student learning. Researchers often examine both functions within a single study to understand the incremental benefit or hindrance each function provides.

The encoding function of note taking is believed to aid learning by promoting active thinking, increased attention, and elaborate processing of information to form a cohesive structure for the notes (Aiken et al. 1975; Einstein et al. 1985). Further, taking notes allows for generative processing where note takers make connections among ideas, tie the ideas to existing knowledge, and draw inferences (Peper and Mayer 1986; Kiewra et al. 1991; Kobayashi 2005). For example, this research finds that participants taking notes have more accurate recall and recognition of lecture information than participants not taking notes (DiVesta and Gray 1972; Fisher and Harris 1973; Aiken et al. 1975; Einstein et al. 1985; Kiewra et al. 1991; Piolat et al. 2005; Kobayashi 2005).

Note taking also provides an external storage function (DiVesta and Gray 1972; Fisher and Harris 1973; Kiewra et al. 1991; Kobayashi 2005), often considered stronger than the encoding function of note taking (Fisher and Harris 1973; Kiewra et al. 1991; Kobayashi 2005). The external storage function is believed to aid learning in two ways. First, externally stored notes are not subject to forgetfulness or memory errors compared to internal memory storage. Second, externally stored notes are available for later review which provides cues for memory, further information processing, and repetitive exposure to material (DiVesta and Gray 1972; Fisher and Harris 1973; Kiewra et al. 1991). This research has found that participants reviewing notes taken during a lecture have higher recall and recognition accuracy of lecture information
than participants not reviewing notes (DiVesta and Gray 1972; Fisher and Harris 1973; Kiewra et al. 1991; Kobayashi 2005).

Although the encoding and external storage functions of note taking generally aid learning, not all research supports a positive relationship between the note taking functions and performance. Multiple studies challenge the encoding function of note taking (Aiken et al. 1975; Kiewra et al. 1991). Aiken et al. (1975) examine note taking by assigning participants to one of three note taking conditions: no note taking, note taking during the lecture, or note taking between lecture segments. Participants listen to a series of audio-taped lectures and complete recall and recognition tasks 48 hours later. Findings are that note taking between segments leads to significantly greater recall than note taking during the lecture and no note taking. Note taking during the lecture does not lead to significantly greater recall than no note taking. This finding suggests that taking notes during the lecture does not improve learning over not taking notes.

Kiewra et al. (1991) examine the encoding and external storage functions of note taking by assigning participants to one of four groups: control group, encoding only, encoding-plus-storage, and external storage only. The control group does not take or use any notes. Encoding only participants take notes without later note review. Encoding-plus-storage participants take and review notes. External storage only participants review other participants’ notes rather than watching the lecture. Participants watch a video-recorded lecture and complete cued-recall and information synthesis tasks. Findings are that encoding-plus-storage participants recall more information than either encoding only or external storage only participants. Encoding-plus-storage and external storage only participants both outperform encoding only participants at synthesizing information. Surprisingly, the encoding only group does not perform significantly
better than a control group that does not take notes. This finding challenges the encoding function in an audio-visual context.

Kobayashi (2005) reports meta-analysis results of 57 studies showing a small to medium effect size for the encoding function of note taking; however the effect size for lectures presented in an audio-visual mode, similar to a client inquiry in audit, is not significantly different from zero. Studies examining audio-visual mode utilize either live lectures or video-recorded lectures. Kobayashi explains the lack of effect size during audio-visual lectures as resulting from participants being more distracted by the physical act of taking notes than participants attending to audio or text-based lectures, due to the increased cognitive complexity of the audio-visual modality (Piolat et al. 2005). One possible explanation is speed of presentation, as speaking speed in a lecture is about two to three words per second whereas handwriting speed for taking notes is only about 0.2 to 0.3 words per second (Piolat et al. 2005). When participants have no control over the rate at which information is presented as in an audio-visual lecture format, the gap between speaking speed and writing speed may result in a diversion of attention or interference when taking notes, hindering encoding.

The external storage function of note taking may be limited to how well participants take notes, since notes cue memory retrieval. Fisher and Harris (1973) report participants with good quality notes recall more information than participants with poor quality notes. Multiple studies examine note content, finding that recall content is highly contingent upon notes content, such that participants recall ideas recorded in notes at a greater proportion than ideas not recorded in notes (Aiken et al. 1975; Einstein et al. 1985). Einstein et al. (1985) compares note taking of successful and less-successful students, finding that successful students record a greater number of important items in notes than do less-successful students, and subsequently recall a greater
number of important items. Participants failing to note important items will likely not recall the missing items (Einstein et al. 1985). Thus, if a participant records notes with a narrow breadth and lacking important items, reviewing those notes will fail to provide specific cues for memory, limiting recall content to the poor note content rather than information perceived in the lecture.

Auditor Note Taking of Client Inquiries

Client inquiries are cognitively complex situations for auditors (Lee and Welker 2007), similar to lectures for students. Like students viewing a class lecture, auditors attempt to gather important information from an in-person speaker who presents the information in an audio-visual format. Also, a client’s speaking pace is not under direct control of an inquiring auditor, just as a lecturer’s pace is not directed by a student in class. Auditors in practice take notes while conducting client inquiries with the anecdotal expectation that doing so has a positive effect on memory and later documentation of an inquiry. When taking notes, auditors must identify relevant audit evidence, organize the evidence into cohesive notes, and encode the evidence to memory. Additional cognitive burdens in a client inquiry versus a lecture include the necessity to develop follow-up questions to keep a one-on-one inquiry moving forward, and the lack of a textbook resource of inquiry information.

Only one study examines the influence of note taking in the client inquiry context, or the audit context in general. Gamble (2013) investigates auditors’ source monitoring ability while manipulating information presentation modality (text only or audio/text) and credibility of the team member providing the information. In a post hoc analysis, Gamble separates participants into those that took notes and those that did not. Gamble finds a positive, significant correlation between note taking and source monitoring, which is an individual’s ability to identify from which source information was received.
Following prior note taking research, auditors’ anecdotal expectations, and Gamble’s findings, I expect note taking to influence auditors’ memory of evidence from client inquiries. Due to auditors’ experience taking notes throughout an extensive education and in practice, I expect the encoding function of note taking will aid evidence gathering by helping auditors to perform more elaborative, relational processing and organizing of the information than non-note taking auditors (Einstein et al. 1985). Additionally, the act of writing notes provides additional cues in memory for later retrieval (Kobayashi 2005), which should improve memory accuracy and breadth compared to non-note takers even if the notes are not later reviewed. Therefore, I predict auditors who take notes during a client inquiry should receive a benefit from the encoding function of note taking. My second hypothesis is as follows.

H2: Auditors who take notes during a client inquiry will have greater memory accuracy of a client inquiry than auditors who do not take notes.

Following an inquiry, auditors document evidence gathered from the inquiry in work papers. Auditors who take notes are likely to utilize the notes to assist with documentation. I expect the external storage function of note taking to aid auditor memory, because reviewing notes allows auditors an additional exposure to evidence gathered, more generative processing time, and an external source of memory cues (Kiewra et al. 1991). These benefits may allow auditors who review notes to have greater memory accuracy of a client inquiry than auditors who do not review notes. My next hypothesis is as follows.

H3: Auditors who subsequently review notes taken during a client inquiry will have greater memory accuracy of a client inquiry than auditors who take but not review notes.

The Interaction of Note Taking and Encoding Style

The encoding and external storage functions of note taking influence information encoding and retrieval from memory (DiVesta and Gray 1972; Fisher and Harris 1973). As such,
these factors are likely to interact with encoding style. Note taking and encoding style differ greatly in their influence on encoding and retrieval. Note taking is an intentional cognitive process reliant upon conscious processing within working memory (Peper and Mayer 1986; Piolat et al. 2005). Contrarily, encoding style is a low-level cognitive function that operates through nonconscious acquisition of information (Lewicki 2005). Whether one factor is more prominent than the other for auditor information encoding and retrieval, or whether they operate in tandem, is an important empirical question.

Einstein et al. (1985) finds the encoding function of note taking leads to improved processing, as well as higher degree to which students integrate ideas within a lecture and discover the underlying theme or structure of the lecture. Einstein et al. further suggest individuals with richer schemata may apply the schemata to the encoding of lecture information, making them more capable of handling the heavy information processing demands of simultaneously listening to, organizing, and taking notes on a lecture. As discussed in a prior section of this chapter, encoding style represents how quickly an individual applies schemata, in the form of encoding rules (Lewicki 2005). Internal encoders, being quick to apply encoding rules, may nonconsciously utilize encoding rules to quickly process and build relations among variables within the inquiry so that information can be quickly organized and written down. This may allow internal encoders to reduce their cognitive demand, limiting interference from taking notes. Meanwhile, external encoders, being slower to utilize encoding rules, consciously process more evidence. Note taking increases the complexity of a client inquiry; thus, when taking notes, the more information-focused external encoders may be overwhelmed, simultaneously attending to information and identifying relationships among variables, allowing note taking to interfere
with encoding. Therefore, I expect an interaction between encoding style and the encoding effect of note taking. My next hypothesis is as follows.

**H4**: Taking notes during a client inquiry will interact with encoding style such that note taking will improve memory accuracy of auditors with a more internal encoding style and reduce memory accuracy of auditors with a more external encoding style, compared to not taking notes.

The external storage function of note taking likely interacts differently with encoding style. Reviewing notes during retrieval allows repeated exposure to the content of the notes, additional generative processing, and memory cues (Kiewra et al. 1991). Additionally, subsequent review of notes occurs under less cognitively demanding circumstances since an auditor can control the speed at which he or she processes information contained in notes (Piolat et al. 2005). Writing notes is a deliberate process; therefore, notes taken during an inquiry will primarily consist of consciously processed facts or interpretations. Any nonconscious encoding rules used when processing and encoding information are not likely to be recorded in notes since they are not available to the conscious mind (Lewicki et al. 1997). Since recall content is highly contingent upon notes content (Aiken et al. 1975; Einstein et al. 1985), and nonconscious encoding rules are not likely to be recorded in the notes, then retrieval of information while reviewing notes may be biased towards consciously processed information, reflecting an external encoder’s processing. My next hypothesis is as follows.

**H5**: Subsequent review of notes taken during a client inquiry will interact with encoding style such that subsequent review will improve memory accuracy of auditors with a more external encoding style to a greater extent than auditors with a more internal encoding style, compared to taking but not reviewing notes.

Figure 1 contains a graph showing the predicted interactions between encoding style and note taking.
Audit Judgment

Upon completing an audit task, auditors evaluate evidence obtained during the task to make various judgments including potential account misstatement (Hirst 1994a), reasonableness of evidence (Peecher 1996), and selection of corroborating procedures (Liu 2012). Prior research finds that auditor memory accuracy impacts auditor judgment (Moeckel and Plumlee 1989; Moeckel 1990, 1991; Choo and Trotman 1991; Tan 1995). Variance between auditors in memory accuracy of audit evidence gathered from client inquiries likely results in different conclusions and judgments. I expect that greater memory accuracy will result in judgments more consistent with the actual account activity, while lower memory accuracy will result in judgments less consistent with actual account activity. Therefore my next hypothesis is as follows.

**H6:** Greater memory accuracy of a client inquiry results in judgments more consistent with account evidence presented during a client inquiry.
Theory and empirical evidence support the influence of encoding style, note taking, and note review on memory accuracy (Dehon et al. 2011; Piolat et al. 2005), but not judgment. Theory and empirical evidence support the influence of memory accuracy on auditor judgment (Moeckel and Plumlee 1989; Moeckel 1990, 1991; Choo and Trotman 1991; Tan 1995). Therefore, if encoding style, note taking, and note review affect memory accuracy, and memory accuracy affects judgment, then each factor likely has a significant indirect effect on judgment through memory accuracy. Therefore, I predict encoding style, note taking, and note review indirectly affect auditor judgment through auditor memory accuracy of evidence presented during a client inquiry. My final hypotheses are as follows.

**H7a:** Encoding style will have a significant indirect effect on judgment through memory accuracy, such that auditors with a more external encoding style will make judgments more consistent with account evidence presented during a client inquiry.

**H7b:** Note taking during a client inquiry will have a significant indirect effect on judgment through memory accuracy, such that auditors who take notes will make judgments more consistent with account evidence presented during a client inquiry.

**H7c:** Subsequent review of notes taken during a client inquiry will have a significant indirect effect on judgment through memory accuracy, such that auditors who subsequently review notes will make judgments more consistent with account evidence presented during a client inquiry.

Figure 2 contains a model showing predicted relationships between the variables in this dissertation, as well as associated hypotheses.
Figure 2

Theoretical Model with Hypotheses Labeled

H7a, H7b, H7c: Encoding style, note taking, and subsequent review, respectively, will have a significant indirect effect on judgment through memory accuracy.
CHAPTER 3

PRACTITIONER INTERVIEWS

This chapter describes the design and completion of practitioner interviews performed as support for my study. I conducted interviews with very-experienced auditors to gather information about client inquiries in practice. In the following sections, I detail my interview design, participant demographics, and results.

Interview Design

Prior research surveys professional auditors regarding the role client inquiries play in analytical procedures (Hirst and Koonce 1996; Trompeter and Wright 2010) and the frequency with which less-experienced auditors inquire with more-experienced client personnel (Bennett and Hatfield 2013). However, no prior research inquires with auditors about how they conduct client inquiries. Specific issues of interest include: auditor training related to client inquiries; preparation for a client inquiry; note taking during client inquiries; use of client inquiry notes for work paper documentation; quality control over evidence gathered from a client inquiry; difficulties encountered conducting client inquiries; and the match between level of auditor and type of inquiry. Understanding firm practices and auditors’ experiences with conducting and documenting client inquiries will likely benefit my dissertation and future research on auditor performance of client inquiries.

Interview Development

I utilized a semi-structured interview methodology to inquire with practicing auditors, following the method used by Hirst and Koonce (1996). Semi-structured interviews allow for interviewees to elaborate when answering questions and interviewers to ask follow-up questions
as necessary. Also, interviewees may express opinions and tell of personal experiences, resulting in a richer data set compared to survey questionnaires.

For the interviews, I developed a list of twenty-one open-ended questions relating to training for, preparing for, conducting, or documenting evidence from client inquiries. These were followed by basic demographics (years of work experience, type of firm, job title, experience with client inquiries, and industry experience). I developed the questions based on my personal work experience, auditing standards, and academic literature (Hirst and Koonce 1996). A retired audit partner with 30 years of experience with a Big 4 accounting firm, and two accounting faculty familiar with the audit profession and audit research, reviewed the interview questions. Questions were edited based on comments received, resulting in the final list of questions reported in Appendix B.

In addition to the open-ended questions, I developed a basic sorting task. I provided interviewees with a list of types of client inquiries (e.g. fraud inquiry, substantive analytics inquiry, internal control walkthrough, etc.). Interviewees were instructed to identify the level of auditor completing each type of client inquiry. Interviewees were then asked to order the client inquiry types in two separate categories: importance to the audit and general difficulty to perform. None of the interview participants completed the sorting task due to time constraints; therefore, my results are based solely on interview responses.

Interview Process

I identified interviewees through personal contacts at various firms including Big 4, international non-Big 4, and regional firms. Ideal participants were very experienced auditors, preferably at the senior manager or partner level. Senior managers and partners are
knowledgeable of firm practices and are likely to have extensive experience performing client inquiries and supervising engagement team member performance of client inquiries.

I asked the interview questions discussed above in the order they appear in Appendix B. I allowed interviewees to elaborate as they wished, and asked follow-up questions as necessary for further clarification, if questions arose. Additionally, I encouraged participants to provide examples from practice. I took a number of steps to ensure trustworthiness of the data (Cohen, Hayes, Krishnamoorthy, Monroe, and Wright 2013). First, prior to the interviews, I provided interviewees with an approved IRB form assuring them confidentiality of information provided during the interview. Second, I began each interview by describing the purpose of the study and providing a clear definition of client inquiry. Third, I requested permission to audio-record the interview to help with information accuracy, while reassuring participants of anonymity, with only one interviewee denying the request. I transcribed the interviews using audio-recordings, if available, and notes. Transcriptions with audio-recordings were transcribed verbatim. I coded responses by interviewee and question.

My goal was to provide three contributions to inform practicing auditors, regulators, and researchers. First, I sought to determine items of consensus in the conduct of client inquiries, note taking, and work paper documentation to create a summary of common practices. Second, I sought to identify unique or contradicting practices between audit firms to identify best practices and/or areas for concern. Finally, I sought to develop a client inquiry taxonomy organized by: importance to the audit, relative difficulty, and level of auditor completing each type of client inquiry. I was unable to achieve my third contribution due to interviewees not completing the sorting task.

21 Specifically, I told each participant, “For the purposes of this survey, the term or any variant of the term ‘client inquiry’ is defined following the PCAOB, AS 15, as ‘[Informal oral inquiries that] consist of seeking information from knowledgeable persons in financial or nonfinancial roles within the company.’”
Interview Results

I conducted interviews with six practitioners by phone in May, June, and August 2014. The interviews ranged in length from 30 to 56 minutes, with an average length of 39.5 minutes. I chose participants to capture a cross-section of firm size and firm location; firms were located in Dallas, TX, St. Louis, MO, and Fort Walton Beach, FL, and consisted of two Big 4 firms, two international non-Big 4 firms, a regional firm, and a large-local firm. Regarding experience, three participants were audit partners, two were senior managers, and one was a managing director. Participants’ financial statement audit experience in public accounting ranged from 12 to 25 years, with an average of 18.83, thus qualifying the participants as very experienced. Additionally, all of the interviewees indicated that they had performed hundreds to thousands of client inquiries in their careers. In all, the sample reflects a diverse, highly experienced group of auditors. See Table 1 for a summary of interviewee demographics.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Firm Size</th>
<th>Rank</th>
<th>Years of Experience</th>
<th>Length (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>International, non-Big 4</td>
<td>Senior Manager</td>
<td>12</td>
<td>56</td>
</tr>
<tr>
<td>B</td>
<td>International, non-Big 4</td>
<td>Managing Director</td>
<td>17</td>
<td>39</td>
</tr>
<tr>
<td>C</td>
<td>Big 4</td>
<td>Partner</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>D</td>
<td>Large Local</td>
<td>Partner</td>
<td>22</td>
<td>39</td>
</tr>
<tr>
<td>E</td>
<td>Regional</td>
<td>Partner</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>F</td>
<td>Big 4</td>
<td>Senior Manager</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>Average:</td>
<td></td>
<td></td>
<td>18.8</td>
<td>39.5</td>
</tr>
</tbody>
</table>

Since the goal of the interviews was to develop an understanding of how auditors perform client inquiries in practice, I discuss results following the three broad question categories presented to participants: training and preparation, conducting a client inquiry, and documentation, review, and follow-up. I grouped participant responses by question to examine
commonalities between responses, as well as identify unique responses. Quotes are attributed to interviewees as identified by letters in Table 1.

**Training and Preparation**

I first asked questions about whether auditors receive training related to client inquiries including how often and what type. All interviewees were confident that auditors receive training related to conducting client inquiries. Three interviewees stated training occurs as part of formal “level” training for associate and senior auditors; early in an auditor’s career an auditor will receive training as they are promoted to the next level within the firm. Five interviewees stated that on-the-job training occurs, where a more-experienced auditor will have a less-experienced auditor join-in during a client inquiry, or a more-experienced auditor will discuss a less-experienced auditor’s questions before an inquiry is performed. Three interviewees discussed role-play as a specific type of training for client inquiries. Interviewee F expanded on the type of training provided:

…it largely consists of simulations. There will be some classroom instruction around, just thinking about the appropriate ways to approach different clients, thinking about their working styles, kind of business chemistry type stuff, to tailor things appropriately and then going in and practicing asking questions, practicing capturing responses, having that observed, getting some debrief feedback, and coaching people through that process so that they can improve that… making sure they are asking the appropriate questions and capturing the details they really need to with respect to audit evidence.

Interviewee B discussed the importance of role-playing in training associates:

If the associate is brand new, you may want to role play with them a little bit on hey, here’s how you ask a question. We push them a little bit because we think associates like to send inquiry via email. So we’re trying to push them to have in person conversations… We’re finding that a little bit of a challenge with the younger generation that seems to rely on electronic communications. So, we think there’s a little bit lacking there in terms of getting the full impact of the inquiry because you cannot read body language, you can’t really expand, and you can’t get as much out of it if you’re just getting flat answers via email.
The next questions in this section related to preparing for a client inquiry. Specifically, I asked interviewees how they suggest auditors should prepare for an inquiry. Four of the six interviewees stressed that auditors should think about questions ahead of time and write the questions down before starting the inquiry. Other methods discussed by multiple interviewees include: consider the end goal of the inquiry and what is trying to be achieved, and consider the client relationship, the client’s working style, preferences, and schedule. One interviewee stated that auditors should realize that client personnel will know activities of the client better than the interviewing auditor, so the interviewing auditor should allow the client to speak and not lead the client to a certain answer. Interviewee E discussed that auditors should look for readily available information and perform due diligence before asking questions; the interviewee stated that auditors too often ask questions that he or she could have found the answer to by reading publicly available information.

I asked the interviewees about his or her firm’s practices regarding question development for inquiries; specifically whether auditors use standardized questionnaires, tailor standardized questionnaires, or develop his or her own questions. All six interviewees responded that a mix of the three options occurs. For audit procedures such as SAS 99 fraud inquiries or internal control inquiries, there are more standardized questions, or as interviewee D stated, “proven questions”, available for auditors to use in an inquiry. For other types of inquiries, such as risk assessment or substantive testing of account balances, the interviewees stressed the need for auditors to develop their own questions, tailoring questions to the industry, client, or situation. Interviewee F stated the firm remains cognizant of the PCAOB’s view that audits should be tailored to individual clients, and checklists or standardized questions are not always appropriate. Interviewee A and interviewee E made statements regarding question style and framing. Interviewee A suggested
auditors develop open-ended questions as much as possible to avoid leading the client.

Interviewee E, in referring to standardized questions, stated:

Sometimes how you phrase a question will produce different answers, the tone and phrasing, especially when you’re interacting with lower-level accounting personnel at the company or non-financial personnel.

Interviewee E provided an example related to internal controls:

‘[Have you] ever been asked to override this process?’ Well, if you ask that question, most people are just going to say no, especially [employees] at [a lower] level in the company because that sounds bad. But if you ask the question like, ‘Do you ever process this transaction differently, would there be an occasion where you would not do it in this manner?’ You’d be surprised at the answers you might get.

The last question I asked in this section was whether the interviewee’s firm requires less-experienced auditors’ questions be reviewed by more-experienced auditors prior to an inquiry. I asked this question assuming that less-experienced auditors are provided some amount of flexibility in asking questions, but that firms want to ensure the right questions get asked. All six interviewees responded there is not a formal question review process prior to inquiries. Three interviewees did mention that a review of questions often occurs informally as part of on-the-job training for less-experienced auditors, or with auditors new to a client or industry. The interviewees were more concerned about question review related to sensitive areas such as fraud interviews or high-risk areas.

These findings have implications for the research community. Possible research topics related to training and preparation for client inquiries is auditor selection of questions, auditor utilization of standardized questionnaires when available, auditor tailoring of questionnaires compared to question development, and the effects of auditor question framing in inquiries.

Conducting a Client Inquiry
In this section, I began by asking three questions to establish an understanding of who performs client inquiries, whether inquiries are performed solo or in pairs, and the level of client employee that auditors inquire with. Interviewees indicated that all levels of auditors perform client inquiries. I then asked four of the interviewees whether inquiries are conducted solo or in pairs. The four interviewees stated that inquiries are conducted either way, depending on circumstances including the type of inquiry, experience level of the auditor, and experience level of the client. Interviewee B suggested auditors typically perform inquiries on a solo basis due to the need for an audit to be efficient; there is a limited amount of time to complete the audit. I then asked whether associate-level and senior-level auditors inquire with upper-level personnel such as controllers. The general response was auditors are not restricted from inquiring with client personnel, particularly if the question to be asked is a match between auditor task and client-level; however, with a very large client, a relatively inexperienced auditor will not likely be allowed to inquire with higher level personnel such as a CFO.

Next, I asked five interviewees about whether he or she has audio-recorded inquiries. Four interviewees said they have never audio-recorded an interview. The fifth interviewee, Interviewee A, has audio-recorded an inquiry only once, and that was the month prior to my interview, otherwise never before. This suggests audio-recording inquiries is very rare. I asked the circumstances around the one recording. Interviewee A suggested that as part of discussing internal control processes the audit team gathered together the client personnel involved with the control process of interest. Then, the audit team displayed the control processes on a screen and had the employees talk through the process. An audio recording was taken to ensure accuracy of the discussion during later documentation; the recording was not maintained as part of audit documentation. I asked the other four interviewees why they think inquiries are not recorded.
The interviewees provided two reasons: litigation risk and client candidness. Interviewees suggested that if audio-recordings were maintained, any extra content on the recordings could be used against the firm or the client employee in litigation. Interviewee D suggested that if an inquiry is recorded, client personnel might be less candid out of fear that the responses may be used negatively later.

I then asked two questions about auditor note taking during client inquiries. First, I asked whether the interviewees’ audit firms require or suggest auditors to take notes during client inquiries. All six interviewees responded that note taking is not required but is highly suggested. Interviewee F stated:

In certain situations it would be required. So again, things like fraud inquiries or more complex transactions or the like, are most certainly going to involve two or more representatives from the firm and probably a designated note taker. For other inquiries where that’s not necessarily required, and maybe just one person goes in, they’re still really highly encouraged to take notes.

Interviewee B stated that good documentation is demanded; taking notes during inquiries is strongly implied to assist with documentation. I then asked four interviewees if they believe note taking improves accuracy of evidence gathered from client inquiries. All four responded that they do believe note taking improves documentation accuracy. Interviewee B elaborated on the importance of note taking by stating:

I actually sit down with interns when they first come in and tell them you need to get in the habit right now of writing things down. You’re going to be multi-tasking, there’s going to be a lot going on. You’re going to have a lot of different tasks, and projects, and clients, and people giving you instructions… I don’t believe you can be effective without writing these things down.

Surprisingly, all of the interviewees stated that the firms do not train auditors at note taking.

The next question in this section was regarding difficulties faced by associate-level and senior-level auditors while conducting client inquiries. As partners and senior managers, the
interviewees have extensive experience supervising associate and senior auditors, as well as reviewing documentation prepared by associate and senior auditors. Each Interviewee provided two to three difficulties. I sorted the difficulties into six broad topics, summarizing them in Table 2 along with brief quotes from each response. The interviewees responded that associate and senior auditors have difficulties prior to an inquiry including properly preparing for the inquiry and selecting an appropriate time and location for the inquiry. The interviewees responded that associate and senior auditors have difficulty during an inquiry with phrasing questions, identifying red flags, knowing when to dig further to ask follow-up questions, and taking notes.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Summary of Difficulties Encountered by Auditors Conducting Client Inquiries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phrasing/communication</td>
<td></td>
</tr>
<tr>
<td>Interviewee A</td>
<td>&quot;How to phrase a question.&quot;</td>
</tr>
<tr>
<td>Interviewee A</td>
<td>&quot;Seeking first to understand than to be understood&quot;</td>
</tr>
<tr>
<td>Interviewee D</td>
<td>&quot;Be sure that what’s being communicated is being received in the same manner. I often see miscommunications develop as a result of misinterpretations of the questions.&quot;</td>
</tr>
<tr>
<td>Interviewee D</td>
<td>&quot;Getting the client to take them seriously or thoughtfully rather than just routine, matter of fact, throw out an answer, I don’t need to think about it.&quot;</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
</tr>
<tr>
<td>Interviewee B</td>
<td>&quot;Lack of experience and necessarily knowing what flags or triggers they may should be hearing in a response.&quot;</td>
</tr>
<tr>
<td>Interviewee E</td>
<td>&quot;The person lacks confidence and they’re not really getting the questions answered to the best of the client’s ability.&quot;</td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
</tr>
<tr>
<td>Interviewee C</td>
<td>&quot;Not appropriately preparing.&quot;</td>
</tr>
<tr>
<td>Interviewee E</td>
<td>&quot;Sometimes I don’t think they ask the right questions. I guess that goes back to, maybe they’re not as prepared as they should be.&quot;</td>
</tr>
<tr>
<td>Interviewee F</td>
<td>&quot;I think, sometimes we’re just a little bit too eager to get those inquiries done. We don’t always stop and say, ok, maybe I do want someone a little more senior with me, or maybe I am not the individual at the right level to be asking these questions. So, just stopping and saying, who should be asking these.&quot;</td>
</tr>
<tr>
<td>Location/timing</td>
<td>Interviewee B</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Interviewee D</td>
<td>&quot;Conducting the conversation in an appropriate setting, selection of time and place of the inquiry can be problematic.&quot;</td>
</tr>
<tr>
<td>Interviewee E</td>
<td>&quot;I think associates and seniors are not as effective as they could be in their process because they haven’t considered their environment. They haven’t checked to make sure that it is a good time and the person has the time at that moment to be able to answer the questions appropriately.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digging further and follow up</th>
<th>Interviewee A</th>
<th>&quot;Know when to peel back the onion, when to dig deeper.&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewee C</td>
<td>&quot;You ask question, get an answer and stop without thinking of further or asking differently.&quot;</td>
<td></td>
</tr>
<tr>
<td>Interviewee F</td>
<td>&quot;The inclination to just accept whatever they’re told right off hand. Sometimes I think you see people answer our questions with a very quick response, and we don’t always necessarily follow up on those types of things; to drill in further and double check that we really do have the understanding that we think we do upon hearing the first response.&quot;</td>
<td></td>
</tr>
</tbody>
</table>

| Note taking | Interviewee F | "I think the other problem we have is people will go in and do these inquiries and get the information they need, and hopefully take very good notes, but sometimes unfortunately those notes will sit on their tablet for days or even weeks before they get around to putting them in working papers, and at that point in time the notes, again made perfect sense when they took them, and if they gone ahead and documented at that point in time, their memory would have been good enough to fully interpret those notes." |

Of specific interest to this dissertation is a statement by interviewee F regarding the difficulty of waiting to document results of an inquiry too long after an inquiry is conducted. Interviewee F stated:

Sometimes unfortunately those notes will sit on their tablet for days or even weeks before they get around to putting them in working papers, and at that point in time the notes, again made perfect sense when they took them, and if they gone ahead and documented at that point in time, their memory would have been good enough to fully interpret those notes.
notes. But with the passage of time, I think sometimes those things do kind of become a little less clear. And that becomes problematic.

According to this statement, auditor memory and note taking may affect the quality of documentation of inquiries, which supports my theoretical model in this dissertation.

The last two questions in this section are in regards to identification of inconsistencies stated by client personnel during an inquiry. I asked five interviewees whether a client has ever provided evidence during an inquiry that was inconsistent with prior evidence obtained in the audit. All five interviewees stated clients have indeed provided inconsistent information during inquiries. I followed up with two interviewees about whether he or she used notes taken during an inquiry to identify inconsistencies. Neither interviewee indicated that notes specifically helped to identify inconsistencies. Interviewee B added the following about planning inquiries, “We’ll take notes. Most cases, the answers are no to all those questions, so I’ll generally only take notes when they tell me something different from everything is fine.” In this example, interviewee B would have to identify a change or inconsistency during the inquiry to make a note about the change or inconsistency, rather than a post hoc analysis of notes to identify inconsistencies.

These findings suggest areas of concern and interest regarding auditors’ conduct of client inquiries. Possible research topics related to conducting a client inquiry includes auditors’ identification of inconsistent evidence during a client inquiry, auditor development of follow-up questions during an inquiry, auditor note taking ability, remediation to encourage less-experienced auditors to ask additional questions or dig deeper, and whether a benefit occurs by having one auditor conduct the interview while a second auditor takes notes.

*Documentation, Review, and Follow-Up*

With this section of questions, I sought to gain an understanding of how auditors ensure the quality of, corroborate, and document evidence gathered from client inquiries.
Of primary importance to my dissertation is identifying firm practices to help ensure evidence is accurately acquired and documented from client inquiries, since the accuracy of evidence documented in the work papers may affect later audit procedures and conclusions. My first question in this section was about what practices used to ensure evidence is accurately acquired and documented from client inquiries. Each interviewee mentioned a unique practice, so I summarized specific quotes from each interviewee below. Interviewee A stated that the firm uses a combination of the following to ensure evidence accuracy: training, reemphasizing to auditors that inquiry evidence alone is not sufficient, establishing some primary questions and checklists within certain types of inquiries that have to be addressed and documented, and conducting internal inspections to check whether inquiry evidence has been documented correctly. Interviewee B stated:

When we ask people to document responses of inquiries with clients we ask them to document who they talked to, what they asked, and what the response was. I think by asking them to be specific about that, it improves the likelihood that you’re going to get accurate documentation of what happened. Again, we emphasize that auditors should write these things down.

Interviewee D highlighted a more informal approach stating:

Informal training that happens on a day to day basis between staff members, managers, and partners, that we’re constantly reinforcing the need for accurate communication and accurate documentation of the conclusions and data that you are obtaining whether that is in written form or verbal form.

Interviewee E stated:

Internally, some other practices we have is we certainly make a huge effort for manager and partner review to happen in the field. So, that way that review is taking place during field work of the work product so the partner and manager can follow up if an answer doesn’t make sense or there doesn’t seem to be enough documentation of a particular issue or objective.
A separate common practice mentioned by each interviewee was the review process; that having multiple levels of review allows the firm to ensure that the evidence documented was appropriate, corroboration was obtained, and the correct conclusions reached.

I asked the interviewees how reliable they consider client inquiry evidence to be. All six interviewees described inquiry evidence as not reliable unless corroborated. Interviewee A stated, “I would say, we definitely have the policy that inquiry alone is not sufficient. I mean that’s our policy. I think if you look at any of our training material, that slide is in there, probably the most repeated slide in the materials.” Interviewee D stated, “It’s either corroborating evidence or it’s initial evidence to which you’re going to perform more audit procedures and work in order to corroborate and end up with a solid audit conclusion.” Interestingly, interviewee C elaborated on the change in professional requirements for auditors regarding corroborating evidence. Interviewee C discussed that twenty years ago the audit attitude towards inquiries was “We came, we heard, we conquered”, but now inquiry is only the starting point. Interviewee C added that the audit process is getting better and audit quality is improving.

To follow up on this question, I asked interviewees how each of their firms determine whether sufficient corroborating evidence has been obtained. The interviewees primarily responded that the review process is the key method to determine that corroborating evidence has been obtained. Regarding the review process, interviewee B stated:

Number one, understanding the risks determines how much corroboration is to be placed. Also, if there are additional procedures you are relying on. For example, if you are primarily taking an analytical approach and relying on analytical procedures as substantive test work, the need to corroborate is significantly higher than if you are doing an analytical procedure as a preliminary or concluding analytic in which case, it’s really more of a kick the tires, lower risk, lower evidence requirements.

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22 Reliability is a characteristic of the appropriateness of audit evidence (AS 15, PCAOB 2010a). “The reliability of evidence depends on the nature and source of the evidence and the circumstances under which it is obtained,” (AS 15.8, PCAOB 2010a).
Interviewee E added:

You know, in terms of corroborating evidence, what we have from a file documentation perspective is, if we can get outside evidence we’re going to get it and put that in the file as appropriate.

To summarize these two questions, corroboration of inquiry evidence is required, but the extent of corroboration is determined by risk and the procedures performed. The review process helps determine whether sufficient corroborating evidence has been obtained.

Although inquiry evidence was not considered to be highly reliable, in requiring corroborating evidence, client inquiry evidence may guide auditor selection of later procedures; therefore, I asked interviewees how evidence obtained from inquiries affects later audit procedures. The interviewees all suggested that inquiries play a significant role in guiding the audit process. Interviewee F stated, “So, a lot of inquiries are from the outset designed to help point us to more reliable audit evidence that we can then go get.” Interviewee A stated:

We use inquiry a lot in risk assessment, especially if we pick up a new client, I mean you’re almost starting off from square one asking as many questions as possible to figure out the true story behind the company.

The other interviewees added that inquiries are the beginning of the audit process, used to understand what is going on at the company, how the company works, and what changes occurred from the prior year. Thus, inquiry is a fundamental audit procedure that will guide auditors’ understanding of a client, risk assessment, and selection of corroborating procedures.

The final questions in this section relate to use of notes taken during client inquiries to assist with audit documentation. I asked five of the interviewees whether they use notes to assist with documentation, and whether notes are maintained as documentation. Interviewees responded they do utilize their notes to assist with documentation; however, the notes are only
used as an aid and not maintained as documentation. Typically, the audit file documentation will be more formal and summarized in a memo or checklist.

The questions in this section related to practices established at the firm level such as documentation and work paper review. Potential research topics in these areas could focus on whether different firm practices result in greater or lesser accuracy of evidence gathered from inquiries. For example, whether the review process is effective at identifying a lack of corroboration of evidence or questions not asked during an inquiry.

*Corroboration of Experimental Design*

A secondary motivation for conducting interviews with practitioners was to validate assumptions made in prior chapters, as well as my experimental design. Specifically, I was interested in corroborating whether or not auditors audio- or video-record client inquiries, take notes during client inquiries, and use evidence gathered from client inquiries to make subsequent judgments. First, I find that auditors very rarely audio-record client inquiries; between six very-experienced auditors with an average of 18.8 years of auditing experience only one occurrence of audio-recording was mentioned. This supports my supposition that auditor memory is vital to accurate acquisition of audit evidence from client inquiries. Second, each interviewee stated he or she takes notes while conducting client inquiries and encourages associates and seniors to do so as well. Overall, interviewees communicated that note taking improves accurate obtainment of evidence from inquiries, supporting my consideration and manipulation of note taking as a factor affecting auditor memory. Lastly, all interviewees agreed that client inquiry is a fundamental audit procedure used throughout audits and provides useful information for later audit judgments. I conclude these findings overwhelmingly corroborate my assumptions and experimental design.
CHAPTER 4
METHODOLOGY

This chapter describes the methodology I used for my dissertation. I tested my proposed hypotheses through developing and administering an experiment to auditor and student subjects. In the following sections, I detail my experimental design, task development, and measurement of variables.

Experimental Design

Design and Subjects

The purpose of my dissertation is to investigate the impact of encoding style and note taking on auditor memory accuracy of, and judgment resulting from, evidence gathered through client inquiries. I simulated a face-to-face client inquiry by having participants watch a video of a hypothetical client controller discussing accounts receivable activity. I measured encoding style with a self-report questionnaire and operationalized note taking through a 2x2 (nested) manipulation of taking notes during the inquiry and reviewing notes after the inquiry. Participants were randomly assigned to one of three conditions: no note taking (NN), note taking without subsequent review (NWoR), or note taking with subsequent review (NWiR). To test my hypotheses, I used MANOVA and path analysis to measure the effects of encoding style and note taking on measures of memory accuracy, the effects of memory accuracy on judgment, and the indirect effects of encoding style and note taking on judgment through memory accuracy.

I obtained 33 professional auditors from seven firms as participants. Additionally, I obtained 23 masters-level and 47 undergraduate-level accounting students from a large public university in the Southwestern United States (Peecher and Solomon 2001; Libby, Bloomfield, and Nelson 2002). See Chapter 5 for participants’ demographic information.
Overview of Experiment

Participants completed the experiment online. Participants were provided an introduction to the experiment including company background and explanation of the task. Participants were informed that he or she is a senior auditor for an international accounting firm auditing a public company client, Sailing Ale Brewery (“SAB”). SAB, a large craft beer brewer based in San Diego, CA, has been a client of the firm for more than five years, receiving unqualified opinions for financial statements and internal controls each year. The remaining background information briefly explains the beer brewing industry, revenue recognition, and risk assessment for accounts receivable. Participants were informed that his or her task is to inquire with SAB’s controller, John Parker, regarding accounts receivable activity and shipments near year end. To control for source credibility, the audit manager states that John Parker has been controller for several years, was an auditor prior to being controller, is honest, and is competent about accounting and the industry.

Participants were then provided SAB’s 2013 and 2012 comparative balance sheets and income statements, a 2013 accounts receivable aging summary, and comparative statistical data. Comparative statistical data includes number of barrels sold, net revenue per barrel, accounts receivable turnover, and days-sales-outstanding.

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23 One audit firm would not allow professional participants to complete the study online; therefore I converted the study to paper form except for the video taped client inquiry which was put on DVD.
24 International accounting firms include the Big 4 and other large firms, each of which audit a large number of public companies. Planning, inquiry, and substantive audit procedures for accounts receivable are performed by a mix of auditors ranging from 0-5 years of experience (Abdolmohammadi 1999). Thus, seniors should have sufficient experience to complete the task.
25 Sailing Ale Brewery is a hypothetical company I created based on the financial statements of an actual public company. All names and locations were changed in creating the hypothetical company.
26 I chose to create a long-standing client that consistently receives unqualified opinions, to limit participants from applying the higher risk assessment and additional procedures associated with new audit engagements.
27 A barrel is a non-financial metric used in the beer brewery industry to represent volume of beer sold, equal to 31 gallons of beer. I provide a note in the case explaining the metric.
Following the financial information, participants were informed that they would view a video of the controller’s response to his or her inquiry. During instructions for viewing the video, participants were prompted to think of a follow-up question during the inquiry to ask the client after the inquiry, further simulating the cognitive complexity of a client inquiry (Lee and Welker 2007). Participants in the NWoR and NWiR conditions were instructed “Your firm requires auditors to take notes during client inquiries. Type notes in the space below the video”; a space was provided for note taking. Participants in the NN condition were instructed “Please do not take notes during the inquiry”; no space was provided for note taking. All participants then watched a client inquiry video lasting approximately three and a half minutes. After the video, on a separate screen, participants were asked for his or her follow-up question for the controller.

Participants then completed a series of measures including the encoding style questionnaire (ESQ, Lewicki 2005), free-recall task, recognition task, four judgments, and control variable questions. Participants in the NWiR condition were able to review his or her notes prior to completing the free-recall and recognition tasks. Participants in the NN and NWoR conditions did not have the opportunity to review notes prior to completing the free-recall and recognition tasks. The experiment closed with demographics, a note taking self-assessment, and a typing self-assessment. The steps of the experiment are detailed in Table 3. Furthermore, the entire experimental instrument is presented in Appendix C.

28 To simulate a client inquiry, participants viewed a video rather than reading a paper-based narrative. Video-based tasks are more cognitively complex than paper-based tasks (Piolat et al. 2005), improving external validity of the task since client inquiries are often performed face-to-face.

29 In my original proposal design, NWiR participants would be allowed to review notes during recall and recognition tasks. Upon final review of the experiment, I decided to move the note review forward prior to recall and recognition tasks. By allowing note review during the recall task, participants have cues and not forced to rely on memory. Since I wanted participants to rely on memory for recall and recognition, note review was moved forward.
Table 3
Experimental Steps

**Step 1:** Participants read case introduction including background information, financial statements, and statistical data.

Participants conduct the client inquiry by viewing the video of the controller discussing accounts receivable. Participants in the note taking and not taking with review conditions are provided a place, and instructed, to take notes.

**Step 2:** Participants enter a follow-up question for the controller.

**Step 3:** Participants complete the encoding style questionnaire.

Participants complete a free recall task followed by a recognition task. Participants in the note taking with review condition are allowed to review notes prior to completing both tasks.

**Step 6:** Participants complete a series of items including judgments, control variable questions, and demographics.

Task Development

The financial statement account under audit in the task should be material to the audit. If the account were not material, then substantive procedures such as inquiry would be very limited. I selected accounts receivable as the account of interest in the task since accounts receivable is material in most audits due to its direct relationship with revenue.\(^{30}\)

I developed an original task for this dissertation. I designed the task to be a video-based client inquiry completed as part of substantive procedures testing a financial statement account. This task requires auditor participants to gather detailed evidence directly from client personnel regarding a specific account using an audio-visual method, simulating the complexities of a face-

\(^{30}\) Auditing standards provide specific guidance for auditing accounts receivable, stating a presumption that accounts receivable will be tested with third-party confirmations due to the high-quality evidence provided, but add that confirmations alone are not likely to provide sufficient substantive evidence for accounts receivable (paragraphs .09, .12, and .34, AU 330, PCAOB 2010e). Substantive analytics and inquiry are procedures likely to be utilized due to their efficiency (AU 329, PCAOB 2010b).
to-face client inquiry discussed in Chapter 2.\textsuperscript{31} To simulate a client inquiry, I needed to develop a hypothetical client, a set of financial statements including other financial information, and a video client inquiry.

\textit{Hypothetical Client}

I created the hypothetical client, SAB, based on an actual public company. Using an actual public company as a basis for the hypothetical client provides three benefits for my experimental design: (1) a public company’s financial statements provide extensive information sufficient to develop a detailed experiment; (2) publicly-traded companies are likely audited by Big 4 accounting firms, providing an appropriate match between the experiment and desired participants; and (3) utilizing actual financial statements supports internal validity of the experiment since financial statement activity should be explained by the MD&A and footnotes, reducing the chance for design errors. To select a company, I considered company size, industry, whether a Big 4 accounting firm performed the 2013 integrated audit of the financial statements and internal controls, and the balance in accounts receivable. Due to the limitations of time in an experimental task, the account balance should be small enough that account activity could be summarized in a short inquiry. Therefore, I reduced my search to companies with a market capitalization of less than $4 billion and an accounts receivable balance of less than $50 million.\textsuperscript{32}

The company I selected was The Boston Beer Company, Inc., which met these criteria for market capitalization and accounts receivable balance, and had a Big 4 auditor in 2013. The Boston Beer Company is in the beer brewing industry. While only four breweries are publicly

\textsuperscript{31} To support content validity of the task and measures, a retired audit partner with 30 years of experience at a Big 4 accounting firm examined the instrument, concluding that the experiment appears reasonable.

\textsuperscript{32} I selected search limits anecdotally after examining the financial statements of many public companies. Also, I have first-hand experience performing client inquiries regarding accounts with balances of this size.
traded, the nature of the industry is manufacturing of a finished good using raw materials. Revenue and accounts receivable are recognized upon shipment of finished goods to third-party distributors. These characteristics may generalize to manufacturing companies in other industries. Finally, I have first-hand audit experience with companies in the beer distribution industry.

Financial Information

I utilized The Boston Beer Company’s 2013 and 2012 comparative financial statements for the task. Since my purpose is to examine auditor memory and judgment from a client inquiry, I limited the amount of background, financial statement, and statistical data to that necessary for providing participants sufficient context. I created two-year comparative balance sheets and income statements by collapsing balances to accounts common to most companies (Cash, AR, Inventory, Revenue, COGS, etc.). I then created an accounts receivable aging summary to agree to the balance sheet and communicate quick collection of accounts receivable balances, reflecting the industry. I selected statistical data from the MD&A including number of barrels sold per year, net revenue per barrel, accounts receivable turnover, and days-sales-outstanding.

By using the audited financial statements of a public company, I assumed no material misstatement existed in the statements. Therefore, to examine auditor judgments resulting from evidence gathered during a client inquiry, I decided to seed inconsistencies in the financial information and client inquiry to provide potential conclusions of misstatement. I developed the aging schedule and altered the statistical data so that five pieces of information would be inconsistent with statements made by the client during the inquiry.\(^{33}\) While the financial

\(^{33}\) Moeckel (1990) seeded work papers with eight inconsistencies. I chose to use five inconsistencies due to the limited length of the financial information and inquiry in this study. Too many inconsistencies in the inquiry would likely create an appearance that the client is lying or incompetent. Five inconsistencies out of 46 ideas communicated are roughly 10 percent.
statements show annual growth and a strong financial position, the inconsistencies between the financial information and inquiry suggest questionable practices regarding valuation and cutoff. These inconsistencies are not meant to indicate fraud, but rather the client “painting a better picture” of the account than is supported by financial information. See Appendix D for the list of inconsistencies.

Client Inquiry Video

To simulate the cognitive complexity of a face-to-face client inquiry, I decided to create a video in which an actor plays the role of client personnel. Video-based experiments have been used in accounting research (e.g. Hammersley, Bamber, and Carpenter 2010), but not to investigate client inquiries, although Hirst and Koonce (1996) provide motivation for research using video or audio due to the limitations of paper-based studies to simulate face-to-face environments. A video-based experiment is important to this dissertation for the following reasons: video-based tasks are more cognitively demanding than paper-based tasks (Piolat et al. 2005); encoding style affects memory when quick information-processing is required, such as having a conversation; the encoding function of note taking was found to be mitigated in studies using audio-visual methodology (Kobayashi 2005); and using a video instead of a live actor provides consistency in material presented, voice inflection, speaking rate, and body language, across all participants, reducing the opportunity for experimental confounds to arise. To create the video, I recruited an individual of appropriate age, with accounting experience, to act as a controller and recite the narrative to the camera.

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34 Using a video hinders external validity to practice since auditors likely vary in how they conduct client inquiries. Additionally, participants will not be able to interrupt the client in the video to ask for clarification of a statement or to request a moment for taking notes, both of which are likely to happen in practice. However, as this is the first study to explore auditor memory of client inquiries, using a video removes a number of potential confounds that could occur if participants conducted an in-person inquiry with a confederate.

35 According to Grant Thornton’s financial executive compensation survey 2013 (Thompson, Cameron, and Adkins 2013), corporate controllers have at least seven years of relevant work experience in addition to a bachelor’s degree.
For the video, I created a client inquiry narrative based on facts from the MD&A included in the selected company’s 2013 financial statements. SAB’s controller discusses how accounts receivable was affected by sales growth, distributor relationships, a brewery acquisition, increased prices, year-end sales, and a new product rollout to begin the following year, all issues that affected the selected company during 2013. I altered specific details about these issues to mask the actual company the narrative was based on. I made the narrative conversational in tone to reflect the informal nature of oral client inquiries (AS 15, PCAOB 2010a), and the actor added additional wording when reciting the narrative. The completed narrative is 502 words in length, communicates 46 ideas, and takes approximately three minutes and 41 seconds to watch. Appendix E presents the list of ideas communicated.

**Variables**

*Independent Variables*

I measured encoding style using the ESQ, a self-report questionnaire developed and validated by researchers in cognitive psychology (Gill 2000; Osicki 2002; Lewicki 2005). The ESQ contains 21 questions with six diagnostic and 15 filler questions. Each question was measured with a six-point Likert-type scale ranging from strongly disagree (1) to strongly agree (6). Following Gill (2000), a six-point scale was used so that there would be no mid-point; thus, respondents would have to at least slightly disagree or slightly agree with each item. The scores for the six diagnostic questions were summed to create an encoding style score (ENCSTYLE) for each participant, ranging from 6 to 36. A higher (lower) score represents a more internal (external) encoding style. Prior studies, and multiple pilot studies for my dissertation, find that

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in accounting or finance, and possibly an MBA (p. 26). If people begin college immediately following high school, graduate with a bachelor’s degree after four years, and then work seven years, I approximate the average minimum age for a controller would be 29 years. I expect that an appropriate age range for a corporate controller would then be from 29 to 35 years of age.  

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participants’ scores follow a normal distribution with half of participants being more internal and the other half more external (Gill 2000; Lewicki 2005). Following prior research, I analyzed ENCSTYLE as a continuous variable (Gill 2000; Dehon et al. 2011).

In practice, auditors take notes during a client inquiry and review the notes subsequent to the inquiry, often during work paper documentation. To examine the impact of note taking and note review on memory accuracy, I manipulated note taking following a 2x2 (nested) design. I created two note taking conditions, no note taking and note taking, and two note review conditions nested within the note taking condition, no subsequent review and subsequent review. Therefore, participants were randomly assigned to one of three groups: no note taking (NN), note taking without review (NWoR), and note taking with review (NWtR). Following prior note taking research, participants in the NWtR condition were asked to review his or her notes prior to beginning the recall task, and instructed to “Please take a moment to review your notes taken during the client inquiry” (Fisher and Harris 1973; Aiken et al. 1975). The effects of the interaction between encoding style and note taking conditions on the dependent variables were examined with ANOVA LS means contrast coding.

**Dependent Variables**

Memory accuracy is one of two primary dependent variables in this study, due to its importance to the accuracy of evidence gathered from a client inquiry. I operationalize memory accuracy with performance on two tasks: a free recall task and a recognition task.

The free recall task asks participants to type all information remembered from the client inquiry. The task occurs after completion of the ESQ, so memories of the client inquiry must be accessed from long-term memory. Two independent coders, both Ph.D. students with public accounting experience, scored participants’ recall by comparing responses to a list of ideas
communicated during the inquiry (Appendix E presents the list of ideas). The coders followed instructions as shown in Appendix F. Responses were gist-scored (Fisher and Harris 1973; Aiken et al. 1975; Choo and Trotman 1991). With this criterion, recall of a given idea does not need to be verbatim; rather, it is sufficient that the meaning is equivalent to that of the inquiry (Choo and Trotman 1991). If a participant response either communicates explicitly or the gist of an idea presented during the inquiry, the response was scored as accurate. Only unique responses were counted, so if a participant had two responses communicating the same idea, only one instance was counted. I measured free recall memory accuracy two ways for each participant: as a percentage of actual recall (ACTRECALL) and as a percentage of possible recall (POSSRECALL). I calculated ACTRECALL by dividing a participant’s number of accurate responses by the total number of ideas he or she entered into the response box. ACTRECALL represents the accuracy of information an auditor would utilize during later judgment and documentation. I calculated POSSRECALL by dividing a participant’s number of accurate responses by the total number of ideas communicated in the client inquiry. POSSRECALL represents the breadth of information accurately gathered from the inquiry; the lower a POSSRECALL score, the more information the auditor failed to notice and remember.

Different than recall, recognition examines memory by providing cues to determine whether participants can distinguish between information perceived earlier and new information. I instructed participants to code a list of twelve statements as having been explicitly stated in, a “valid summary” of, or “new, not a valid summary” of original information from the inquiry (Moeckel 1990, p. 374). I designed the twelve statements so that four were explicit quotes from the inquiry, four were valid summaries of information in the inquiry, and four were completely new information. I calculated recognition accuracy (RECACC) for each participant by counting
the number of statements correctly coded and dividing the result by the total number of statements (twelve). See Appendix G for the correct answers to the recognition task. RECACC represents an auditor’s ability to distinguish evidence obtained during an inquiry (explicitly stated in), evidence inferred from the inquiry (“valid summary”), or evidence not obtained from the inquiry (“new, not a valid summary”).

Judgment resulting from evidence gathered during a client inquiry is my second type of dependent variable. As a substantive procedure, client inquiry does not provide final, conclusive evidence for significant accounts such as accounts receivable. Rather, client inquiry may allow auditors to identify financial statement errors or obtain evidence to direct later audit procedures (Wright and Ashton 1989; PCAOB 2010c). Therefore, I selected judgments reflecting a preliminary level of judgment. I operationalized judgment through four continuous measures developed based on prior research. The first judgment was probability of misstatement in the account (MISSTATED) (Hirst 1994a), scored on a 101-point scale ranging from no possible chance (0 percent) to absolute certainty (100 percent). The second judgment was reasonableness of the client’s explanation (REASONABLE) (Peecher 1996), scored on a seven-point Likert-type scale ranging from not at all reasonable (1) to very reasonable (7). The third judgment was likelihood of increasing substantive testing for accounts receivable (INCTEST) (Liu 2012), scored on a seven-point Likert-type scale ranging from not at all likely (1) to very likely (7). The final judgment was selection of substantive procedures (Liu 2012). I provided participants ten options to select from: four types of procedures each with two amounts of extensiveness, request more hours from the partner, or no further testing. Each choice included a number of hours required for the procedure. Participants were asked to select any number of procedures up to a total of 30 hours. I measured this judgment by the number of procedures selected (SUBCOUNT)
and number of hours utilized (SUBHOURS). Due to the financial information presented, and inconsistencies between the financial information and inquiry, I considered selection of the more extensive procedures to be more appropriate.\textsuperscript{36}

*Control Variables*

I measured multiple items as potential control variables for my study. The first measure was confidence (CONFIDENCE) since auditors can be overconfident about memory (Moeckel and Plumlee 1989). CONFIDENCE was measured on a seven-point Likert-type scale ranging from not at all confident (1) to very confident (7). The second measure was participants’ assessment of SAB’s financial condition (ASSESS) since extreme opinions on financial condition may affect audit judgments. ASSESS was measured on a seven-point Likert-type scale ranging from weak financial condition (1) to strong financial condition (7). The third measure was participant identification of inconsistencies between the financial information and the inquiry (INCONSISTENT). INCONSISTENT was measured with a separate question asking participants to list any noticed inconsistencies, scored by counting the number of inconsistencies listed that are correctly identified. The final measures were participants’ self-assessment of note taking (NOTEABILITY) and typing ability (TYPEABILITY). NOTEABILITY was scored with three items, while TYPEABILITY was scored with five items, each measured with a seven-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7). Finally, I measured demographics including years of experience, experience with inquiries, age, gender, and education level.\textsuperscript{37}

\textsuperscript{36} Number of hours selected can range from zero to 30. If the four less extensive procedures were selected, the total hours would be 22. If the four more extensive procedures were selected, the total hours would be 44, over the maximum of 30. I designed the total hours and the number of hours per procedure to keep participants from automatically selecting all of the extensive procedures. Only selecting the four less extensive procedures would still greatly impact the budget, following practice where a budget is designed based on procedures to be completed.

\textsuperscript{37} I designed the demographic questions to comply with accounting firms’ requests, including measuring age and years of experience with range of years rather than fill in the blank.
Pilot Test

I piloted preliminary versions of the experiment with students. Many results were in the directions hypothesized, and many predicted relationships were statistically significant. I refined the experiment based on results of the pilot tests.
CHAPTER 5

RESULTS

This chapter discusses the results from administering my experimental instrument with both student and auditor subjects. All p-values reported are two-tailed.

Participant Demographics

I sought audit seniors and accounting students as participants in this study. To obtain audit seniors, I contacted partners and managers by email at two Big 4 accounting firms, four international non-Big 4 accounting firms, and two regional/local accounting firms. Additionally, I submitted research proposals to the two other Big 4 accounting firms. To obtain accounting students, I made in-class announcements to two sections of a masters-level auditing course and two sections of a senior-level undergraduate-auditing course, all at a large public university in the southwest.38

I developed the experiment on Qualtrics to collect data online. Utilization of Qualtrics for the experiment had three primary benefits: random assignment of participants to note taking conditions, placement of the client inquiry video within the survey, and efficient distribution to auditors at multiple firms and firm locations. Data collection occurred primarily online; however, one Big 4 accounting firm required the instrument to be on paper.39

38 Extra credit points were offered to the undergraduate students for participation. To record participation, undergraduate students were forwarded to a separate survey for name input following completion of the study.
39 Converting the experiment to paper required two changes. First, I put the inquiry video on dvds to meet the firm’s requirements that nothing be online. Instructions explicitly asked participants to only watch the video once as though it were a real inquiry; however, I gave up the ability to measure the time participants spent watching the video. By not measuring time spent, I could not identify and remove participants who did not watch the entire video. This is not a significant concern since all of the professional participants who completed the online version watched the entire video suggesting professionals gave good effort in the study. Second, I developed a two-packet system for the experiment to simulate participants’ inability to look back at previous answers in the online version, and modified instructions accordingly. If all materials were contained in one packet, participants may be more likely to look ahead or backward within the single packet. I believe splitting the experiment into two packets with separate cover page instructions provides a natural division in the materials between background information, independent measures, and dependent measures, which limits looking ahead or backward. This is similar to the online experiment where the software restricts participants from moving back to prior pages, or moving forward until measures on a page are
One hundred fifty participants entered the study online including 26 professionals, 40 masters students, and 84 undergraduate students. Four professionals, 14 masters students, and 28 undergraduate students were removed for not finishing the study. Three masters students and nine undergraduate students were removed for not viewing the entire client inquiry video, or requesting to not be included in the study. For the paper studies, I delivered 48 envelopes to the firm. After two months, and multiple emails with the client contact, 11 completed studies were received. The resulting sample contains 103 usable responses, including 33 professionals, 23 masters students, and 47 undergraduate students. Of the professional participants, 12 work for Big 4 firms, eight work for international, non-Big 4 firms, eight work for national firms, and five work for regional firms. Thirty-one of the professionals are senior auditors, one is an associate auditor, and one is a manager. Twenty-six of the professionals have a CPA license. All 33 professionals have conducted client inquiries and take notes during inquiries, supporting the experimental design of the study and level of professional participants. Thirty-two of the professionals have conducted inquiries with client personnel at the controller level or above. Of the student participants, 13 had either audit or tax internship experience during which 10 conducted a client inquiry. I measured age, years of experience, and years since last class, using a range at the request of a firm. See Table 4 for a summary of demographic information.

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40 Firm size was not correlated with any dependent variables except percentage of actual recall (ACTRECALL), which represents the accuracy of items recalled by participants. Including firm size as a control variable did not alter my results or conclusions. Since the majority of my data is from students, I did not maintain firm size as a control variable in my analyses.
Participants were randomly assigned to one of three note taking conditions. Qualtrics automatically assigned participants to a condition after they began the study. For paper surveys, I sorted the experimental conditions before delivering the package to the client contact who was unaware of the experimental conditions or order. The client contact then distributed the packets, allowing for random assignment to note taking condition. After removal of incomplete responses, the resulting distribution by condition is as stated in Table 5. Distribution of participants to note taking conditions is not balanced due to two limitations. First, removal of incomplete responses affected the distribution of undergraduate and masters students. Second, professional participants assigned to the NWiR condition returned less packets than participants in the other two conditions, which was beyond my control; however, I have no reason to believe this self-selection was due to the manipulation since these participants were not asked to do significantly more than participants in other conditions.

<table>
<thead>
<tr>
<th>Participant Demographics</th>
<th>Undergraduate Students</th>
<th>Masters Students</th>
<th>Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Participants</td>
<td>47</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Male (%)</td>
<td>61.7</td>
<td>60.9</td>
<td>57.6</td>
</tr>
<tr>
<td>Internship (%)</td>
<td>10.6</td>
<td>34.8</td>
<td>N/A</td>
</tr>
<tr>
<td>Conduct inquiry (%)</td>
<td>2.1</td>
<td>39.1</td>
<td>100</td>
</tr>
<tr>
<td>Take notes (%)</td>
<td>8.5</td>
<td>39.1</td>
<td>100</td>
</tr>
<tr>
<td>Inquired w/ controller</td>
<td>0</td>
<td>34.8</td>
<td>97</td>
</tr>
<tr>
<td>Audited accounts receivable (%)</td>
<td>2.1</td>
<td>17.4</td>
<td>97</td>
</tr>
<tr>
<td>CPA (%)</td>
<td>0</td>
<td>0</td>
<td>78.8</td>
</tr>
<tr>
<td>Years experience (mean)</td>
<td>&lt;1</td>
<td>1-2</td>
<td>3-4</td>
</tr>
<tr>
<td>Mean age</td>
<td>23-25</td>
<td>23-25</td>
<td>26-28</td>
</tr>
<tr>
<td>Master's degree (%)</td>
<td>N/A</td>
<td>N/A</td>
<td>69.7</td>
</tr>
<tr>
<td>Years since class (mean)</td>
<td>N/A</td>
<td>N/A</td>
<td>3-4</td>
</tr>
</tbody>
</table>
Table 5

Distribution of Participants to Note Taking Conditions

<table>
<thead>
<tr>
<th>Note Taking Conditions</th>
<th>Undergraduate Students</th>
<th>Masters Students</th>
<th>Professionals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN</td>
<td>14</td>
<td>9</td>
<td>12</td>
<td>35</td>
</tr>
<tr>
<td>NWoR</td>
<td>17</td>
<td>7</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>NWiR</td>
<td>16</td>
<td>7</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>23</td>
<td>33</td>
<td>103</td>
</tr>
</tbody>
</table>

Validity Checks

To ensure the validity of data obtained from participants, the experimental instrument included manipulation checks and motivation questions. In this section, I assess the validity of the obtained data prior to analyzing hypotheses to determine participants followed experimental instructions and made good effort during the study.

**Manipulation Checks**

As previously discussed, the experimental instrument contained one manipulation: random assignment to one of three note taking conditions. The manipulation included different instructions to participants depending on assigned note taking condition, along with the restriction or allowance to take and review notes. The manipulation checks determine whether participants followed the instructions of the condition to which he or she was assigned. The manipulation check for participants in the NN condition is that they did not take notes, as instructed. I examined the paper experiment packets to see whether any notes appeared on the packets. None of the packets contained any written notes about the inquiry. Online participants had no option to type notes; however, I could not observe whether the participants took notes on a separate piece of paper. The manipulation check for participants in the NWoR and NWiR conditions is whether the participants took notes as instructed. All participants in both note
taking conditions took notes. The final manipulation check for participants in the NWiR condition is whether they spent time reviewing notes, as instructed. All participants in the NWiR condition spent time reviewing his or her notes, measured in seconds, with means of 19.73, 22.37, and 34.07 for undergraduate students, masters students, and professionals, respectively.\(^{41,42}\) I conclude that participants passed the manipulation checks.

**Motivation Questions**

The second validity check for the data relates to participants’ motivation in completing the experimental instrument. The instrument contains four questions in the demographic section to address this.

Three motivation questions ask participants to report the extent to which they thought the case was realistic, interesting, and understandable. The fourth motivation question asks participants to report, in general, the usefulness of client inquiries in understanding fluctuations in account balances. If a participant did not see the case as realistic, interesting, or understandable, or the task as useful, then data validity may be compromised. Each question was measured with a seven-point Likert-type scale from 1 (not at all) to 7 (very).

Analysis of responses to motivation questions is in Table 6. Overall, participants viewed the study as realistic (mean=5.700), interesting (mean=5.170), and understandable (mean=5.490), supporting validity of the data. Additionally, participants believe client inquiry to be a useful procedure in understanding account activity (mean=5.770). The only significant variance by participant type was for whether the study was understandable (F=3.334, p=.040),

\(^{41}\) The means exclude two professional participants who completed the paper version of the study, since the participants’ review times could not be measured. 
\(^{42}\) Professionals spent more time reviewing notes than students; however, a one-way ANOVA F-test indicates the difference in review time between participant groups is not significant (F=.687, p=.512). Additionally, results of contrast coding (Buckless and Ravenscroft 1990) indicates that the time professionals spent reviewing notes does not differ significantly from the time spent by undergraduate students (t-test=.987, p=.360) or master’s students (t-test=.646, p=.532).
with the professionals (mean=5.910) considering the case as more understandable than undergraduate students (mean=5.190), although both groups rated usefulness above the midpoint.

Table 6
Analysis of Participants’ Motivation

<table>
<thead>
<tr>
<th>Realistic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics:</strong></td>
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<tr>
<td>Undergraduate Students</td>
</tr>
<tr>
<td>Masters Students</td>
</tr>
<tr>
<td>Professionals</td>
</tr>
<tr>
<td>Overall Sample</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Analysis: One-way ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Analysis: F-Test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sample</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics:</strong></td>
</tr>
<tr>
<td>Undergraduate Students</td>
</tr>
<tr>
<td>Masters Students</td>
</tr>
<tr>
<td>Professionals</td>
</tr>
<tr>
<td>Overall Sample</td>
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</tbody>
</table>

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<tr>
<th>Data Analysis: One-way ANOVA</th>
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</thead>
<tbody>
<tr>
<td>Professionals</td>
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<table>
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<tr>
<th>Data Analysis: F-Test p-value</th>
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<tr>
<td>Overall Sample</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics:</strong></td>
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<td>Undergraduate Students</td>
</tr>
<tr>
<td>Masters Students</td>
</tr>
<tr>
<td>Professionals</td>
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<tr>
<td>Overall Sample</td>
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</table>

<table>
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<tr>
<th>Data Analysis: One-way ANOVA</th>
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<tbody>
<tr>
<td>Professionals</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Analysis: F-Test p-value</th>
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<tr>
<td>Overall Sample</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Useful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics:</strong></td>
</tr>
<tr>
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</tr>
<tr>
<td>Masters Students</td>
</tr>
<tr>
<td>Professionals</td>
</tr>
<tr>
<td>Overall Sample</td>
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<tr>
<td>Professionals</td>
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</table>

<table>
<thead>
<tr>
<th>Data Analysis: F-Test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sample</td>
</tr>
</tbody>
</table>
Data Analysis

In this section, I first examine the variables to be used in analyses including construct validity and examination of means and correlations. Then, I test each hypothesis in the order presented in Chapter 2, interpreting the results of each hypothesis test.

Construct Validity

Encoding Style

Encoding style determines how quickly an individual’s mind initiates schemata when perceiving a stimulus. An individual has either a more internal (hasty initiation) or a more external (conservative initiation) encoding style. An individual’s encoding style is measured with a composite score by calculating the sum of responses to six diagnostic items on a self-report questionnaire (Lewicki 2005). To examine construct validity and reliability, I performed a principal components factor analysis with varimax rotation for the six diagnostic items. All six items load on one factor. Four items have factor loadings greater than 0.7, while two items have factor loadings less than 0.7 but greater than 0.5. The Cronbach’s alpha for the six items is 0.811. Removing the two items with low factor loadings improves Cronbach’s alpha only slightly to 0.831. Without sufficient theory to drop scale items, all six items were maintained in calculation of the composite score (Lewicki 2005). Results are reported in Table 7.

Encoding style scores in the general population should follow a normal distribution with scores ranging from 6 to 36 and a mean of approximately 21 (Lewicki 2005). Encoding style scores in my sample range from 6 to 31 with a mean of 19.01, representing a slight shift towards a more external encoding style compared to college student samples examined in previous studies (Gill 2000; Lewicki 2005; Dehon et al. 2011). ANOVA results show that participants differ significantly in encoding style by participant group (F=4.818, p=.010). To further
understand this difference, I conducted one-way ANOVA contrast coding between participant groups. Results show that undergraduate and master’s students do not differ significantly (t-test=.470, p=.639), while the professionals differ significantly from both undergraduate (t-test=3.026, p<.01) and master’s students (t-test=2.089, p=.039). The mean of professionals’ encoding style score of 16.48, representing a more external encoding style than the general student population tested in prior research (Gill 2000; Lewicki 2005). This finding suggests a self-selection bias; people who enter and stay in the auditing profession for multiple years have a more external encoding style that the more general group of accounting students who may choose tax or other accounting-related roles. This supports a study by Osicki who found significant differences in students’ encoding style between rule-bound and non-rule bound college majors or careers (Osicki 2002).

A concern is whether the mean and variance of encoding style scores differ significantly between note taking conditions since participants were randomly assigned to one of three conditions. Results of one-way ANOVA analyses of encoding style by note taking condition confirm that encoding style does not differ between conditions for undergraduate students.
(F=2.711, p=.078), masters students (F=.447, p=.646), or professionals (F=1.791, p=.184), and has equal variance between conditions for undergraduate students (Levene’s statistic=.346, p=.709), masters students (Levene’s statistic=.382, p=.687), and professionals (Levene’s statistic=.184, p=.833). These results support that random assignment of participants to note taking conditions was effective in randomizing encoding style.

**Dependent Variable – Recall**

As discussed in Chapter 4, two independent doctoral students coded participants’ free recall responses. The coders counted the number of total items recalled and number of accurate items recalled for each participant. I calculated inter-rater reliability for each measure using Lin’s concordance correlation coefficient since the coded responses are continuous measures (Lin 1989). The concordance correlation coefficient ranges from 0 to 1.00, with 1.00 representing perfect agreement. The resulting concordance correlation coefficients for total items recalled ($\rho_c=.930$) and accurate items recalled ($\rho_c=.874$) support very high inter-rater agreement. As an alternative measure of inter-rater reliability, I calculated the intraclass correlation coefficients for total items recalled ($\rho_i=.964$) and accurate items recalled ($\rho_i=.934$), which also support very high inter-rater agreement. The coders met to resolve coding discrepancies, and were able to come to agreement.

I utilized the agreed-upon coding results to calculate percentage of actual recall (ACTRECALL) and percentage of possible recall (POSSRECALL), as described in Chapter 4. I calculated ACTRECALL by dividing the number of accurate items recalled by total items recalled. ACTRECALL scores range from 0 to 100, and has a skewed left distribution with a

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43 Cohen’s kappa is commonly used to assess inter-rater reliability; however, the statistic is appropriate for estimating inter-rater reliability of categorical measures rather than continuous measures (Banerjee, Capozzoli, McSweeney, and Sinha 1999). The concordance correlation coefficient is more appropriate for estimating inter-rater reliability for continuous measures (Chinchilli, Martel, Kumanyika, and Lloyd 1996; Banerjee et al. 1999).
mean of 84.475 and standard deviation of 22.515. The skewness is due to multiple participants scoring 100 percent on ACTRECALL, which is interpreted as being perfectly accurate in the items recalled during the task. I calculated POSSRECALL by dividing the number of accurate items recalled by the number of items communicated in the inquiry (46). POSSRECALL scores range from 0 to 39.130, and follows a normal distribution with a mean of 16.399 and standard deviation of 9.019. A higher score represents greater memory accuracy for each variable. The mean of 16.399 can be interpreted as participants accurately recalling approximately 7 ideas from the 46 ideas presented in the inquiry. The discrepancy in means between ACTRECALL and POSSRECALL represents that while participants were highly accurate in the information recalled, the breadth of information recalled from the inquiry was limited.

*Control Variable – Inconsistent Evidence*

As discussed in Chapter 4, I seeded the experiment with five inconsistencies between the background information and client inquiry narrative. Identifying more inconsistencies may influence a participant’s judgments of the probability of material misstatement, reasonableness of the client’s explanation, and likelihood to increase substantive testing, relative to a participant identifying fewer inconsistencies; therefore, I control for identification of inconsistencies. To calculate an inconsistent evidence score, I counted the number of items a participant listed in the inconsistent evidence box. Items were counted regardless of accuracy to the case, since any item listed by a participant was perceived as an inconsistency. This created a continuous variable with a possible score of zero to five, with zero representing no inconsistencies identified. Overall, participants identified a mean of .36 inconsistencies, with a minimum of zero and maximum of three. Professionals (mean=.760) identified more inconsistencies than did undergraduate (mean=.190) or masters students (mean=.130). ANOVA results show that the difference between
professionals and students is significant (F=11.434, p<.01). Additionally, a greater number of professionals (51.5%) identified at least one inconsistency than undergraduate (19.1%) or masters students (13.0%). Results of regression analysis show that identification of inconsistencies does not vary by encoding style score (b=-.112; p=.261). These results support that auditing experience improves an auditors’ ability to process information stated during an inquiry and compare the information to previously examined audit evidence.

Control Variable – Ability

I measured participants’ belief of note taking ability and typing ability with eight items. I performed principal components factor analysis with varimax rotation to examine convergent and discriminant validity. The eight items loaded on two factors with all loadings greater than .649. Cronbach’s alpha was .670 for the note taking ability items and .860 for the typing ability items, showing sufficient reliability for the measures. I calculated composite scores of NOTEABILITY and TYPEABILITY by averaging the respective items.

Correlation Analysis

I performed a correlation analysis including independent, dependent, and control variables. The correlation provides a preliminary understanding of relationships among variables, specifically in terms of potential covariates. The results are reported in Table 8 below. The non-significance of the correlation between encoding style score and measures of memory accuracy do not provide preliminary support for hypothesis 1. The significant correlation between the assigned note taking condition (NOTETAKINGCONDITION) and explicit/summary accuracy (EORSRECCACC) (ρ=-.205, p=.038) provides preliminary support for hypotheses 2 and 3. The significant correlations between recognition accuracy (RECACC) and judgments including probability of misstatement in the account (MISSTATED) (ρ=-.242, p=.014), reasonableness of
client’s explanation (REASONABLE) \( (\rho = .344, p<.01) \), and number of hours utilized in selection of substantive procedures (SUBHOURS) \( (\rho = -.204, p = .039) \), provide preliminary support for hypothesis 6. Additionally, the significant correlations between EORSRECACC and MISSTATED \( (\rho = -.382, p<.01) \), REASONABLE \( (\rho = .391, p<.01) \), and INCTEST \( (\rho = -.262, p<.01) \) provide further support for hypothesis 6. Hypotheses 4, 5, and 7 require interaction or indirect effects, which cannot be evidenced through correlation analysis.

Professionals may differ from students in memory accuracy and judgment due to audit knowledge and experience conducting client inquiries (Bonner 1990; Bonner and Lewis 1990). This is further evidenced by significant correlations between PARTTYPE and POSSRECALL \( (\rho = .345, p<.01) \), REASONABLE \( (\rho = .222, p = .024) \), and INCONSISTENT \( (\rho = .368, p<.01) \). To determine whether to control for participant type in my analyses, I performed one-way ANOVA and contrast coding t-tests (Buckless and Ravenscroft 1990) of participant type on the dependent variables. Results are reported in Table 9 below. I find that professionals do differ significantly from master’s students in POSSRECALL \( (t = 3.088, p<.01) \), RECACC \( (t = 2.035, p = .044) \), EORSRECACC \( (t = 2.091, p = .039) \), and REASONABLE \( (t = 2.283, p = .025) \). Professionals differ significantly from undergraduate students in POSSRECALL \( (t = 3.852, p<.01) \), REASONABLE \( (t = 2.412, p = .018) \), and CONFIDENCE \( (t = 3.171, p<.01) \). Masters students do not differ significantly from undergraduate students on any measure. On average, the professional participants have higher recall accuracy, recognition accuracy, judge the client’s explanation as more reasonable, and have higher confidence in his or her own memory than the students; therefore, I will control for participant type in my analyses.
Table 8

Variable Means, Standard Deviations, and Pearson Correlations

| Mean | Std. Dev. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1. PARTTYPE | 1.860 | 0.875 | 1.000 |
| 2. ENCTYSTYLE | 19.010 | 5.945 | -0.282** | 1.000 |
| 3. NOTETAKING CONDITION | 1.960 | 0.803 | -0.091 | -0.090 | 1.000 |
| 4. ACTRECALL | 84.475 | 22.515 | 0.000 | -0.066 | 0.106 | 1.000 |
| 5. POSSRECALL | 16.399 | 9.019 | 0.345** | -0.094 | -0.058 | 0.473** | 1.000 |
| 6. REACCC | 58.819 | 15.604 | 0.119 | -0.039 | -0.090 | 0.316** | 0.383** | 1.000 |
| 7. EORSREACCC | 75.890 | 12.178 | 0.134 | 0.038 | -0.205* | 0.112 | 0.296** | 0.711** | 1.000 |
| 8. MISSTATED | 39.920 | 22.532 | -0.157 | 0.076 | 0.147 | -0.050 | -0.123 | -0.242* | -0.382** | 1.000 |
| 9. REASONABLE | 4.840 | 1.145 | 0.222* | -0.208* | -0.172 | -0.033 | 0.098 | 0.344** | 0.391** | -0.528** | 1.000 |
| 10. INCTEST | 4.990 | 1.354 | -0.109 | 0.044 | 0.126 | 0.144 | 0.050 | -0.031 | -0.262** | -0.409** | -0.541** | 1.000 |
| 11. SUBCOUNT | 3.560 | 0.946 | -0.132 | 0.163 | 0.029 | 0.048 | 0.026 | -0.080 | -0.115 | 0.049 | -0.186 | 0.012 | 1.000 |
| 12. SUBHOURS | 28.070 | 8.292 | 0.030 | 0.060 | -0.156 | -0.045 | -0.074 | -0.204* | -0.177 | 0.097 | -0.222* | 0.028 | 0.651** | 1.000 |
| 13. CONFIDENCE | 4.390 | 1.231 | 0.268** | -0.172 | -0.004 | 0.018 | 0.350** | 0.301** | 0.227* | -0.220* | 0.327** | 0.038 | -0.173 | -0.182 | 1.000 |
| 14. ASSESS | 4.860 | 0.875 | 0.040 | -0.250* | -0.133 | 0.095 | 0.274** | 0.262** | 0.234* | -0.338** | 0.408** | -0.216* | -0.203* | -0.310** | 0.159 | 1.000 |
| 15. INCONSISTENT | 0.360 | 0.639 | 0.368** | -0.112 | 0.161 | 0.082 | 0.380** | 0.072 | 0.053 | -0.053 | 0.046 | 0.027 | 0.003 | -0.069 | 0.257** | 0.141 | 1.000 |
| 16. NOTABEABILITY | 5.110 | 1.158 | 0.018 | 0.106 | -0.076 | 0.079 | 0.177 | -0.066 | -0.078 | 0.215* | -0.130 | 0.082 | -0.043 | 0.025 | 0.143 | -0.069 | 0.014 | 1.000 |
| 17. TYPEABILITY | 4.910 | 1.317 | 0.171 | -0.119 | 0.080 | 0.027 | 0.194* | 0.160 | 0.035 | -0.042 | 0.024 | 0.076 | -0.045 | -0.087 | 0.434** | 0.046 | -0.015 | 0.380** | 1.000 |
| 18. AGE | 2.470 | 1.310 | 0.220* | -0.387** | 0.083 | -0.011 | 0.019 | 0.133 | 0.122 | -0.077 | -0.009 | 0.064 | -0.029 | 0.129 | 0.116 | -0.029 | 0.216* | -0.116 | 0.104 | 1.000 |
| 19. GENDER | 1.400 | 0.493 | 0.036 | 0.069 | 0.039 | -0.069 | -0.045 | -0.143 | -0.155 | 0.094 | -0.009 | 0.004 | -0.086 | -0.045 | -0.064 | -0.101 | -0.023 | 0.148 | -0.033 | 0.008 | 1.000 |

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

Key:
1. PARTTYPE: participant type scored as 1- undergraduate students, 2- master's students, and 3-professionals;
2. ENCTYSTYLE: participant's encoding style score measured by the Encoding Style Questionnaire (Lewicki 2005), ranges from 6 (more external)-36 (more internal);
3. NOTETAKINGCONDITION: note taking condition where participants were assigned to one of three conditions- no note taking (NN), note taking without review (NWOr), and note taking with review (NWIr);
4. ACTRECALL: participant's memory accuracy measured by a free recall task, calculated as number of items accurately recalled divided by number of items recalled, ranges from 0-100 percent;
5. POSSRECALL: participant's memory accuracy measured by a free recall task, calculated as number of items accurately recalled divided by number of items communicated in the inquiry, ranges from 0-100 percent;
6. REACCC: participant's memory accuracy measured by performance on a recognition task, calculated as the number of items correctly coded divided by the number of items, ranges from 0-100 percent;
7. EORSREACCC: participant's memory accuracy measured by performance on a recognition task, calculated as the number of items correctly coded divided by the number of items communicated in the inquiry, ranges from 0-100 percent;
8. MISSTATED: participant's judgment of probability of material misstatement in the account, 0 (no possible chance)-100 (absolute certainty);
9. REASONABLE: participant's judgment of reasonableness of the client's explanation, 1 (not at all reasonable)-7 (very reasonable);
10. INCTEST: participant's judgment of likelihood of increasing substantive testing, 1 (not at all likely)-7 (very likely);
11. SUBCOUNT: number of substantive audit procedures selected by participants, 0-10 procedures;
12. SUBHOURS: participant's selection of substantive audit procedures, 0-30 hours;
13. CONFIDENCE: participant's confidence in their memory, 1 (not at all confident)-7 (very confident);
14. ASSESS: participant's assessment of the company's financial condition, 1(weak)-7 (strong);
15. INCONSISTENT: count of number of inconsistencies identified by a participant between the background information and inquiry, ranges 0-5;
16. NOTABEABILITY: participant's belief of his or her note taking ability, composite score of three items 1 (strongly disagree)-7 (strongly agree);
17. TYPEABILITY: participant's belief of his or her typing ability, composite score of five items 1 (strongly disagree)-7 (strongly agree);
18. AGE: 1 (18-22), 2 (23-25), 3 (26-28), 4 (29-30), and 5 (>30); and
### Table 9

ANOVA of Professionals and Students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall Mean</th>
<th>Professional</th>
<th>Masters Students</th>
<th>Undergraduate Students</th>
<th>F test</th>
<th>Levene's Statistic</th>
<th>Contrast t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTRECALL</td>
<td>84.475</td>
<td>85.771</td>
<td>80.717</td>
<td>85.403</td>
<td>0.410</td>
<td>2.088</td>
<td>0.822</td>
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<tr>
<td>POSSRECALL</td>
<td>16.399</td>
<td>21.344</td>
<td>14.272</td>
<td>13.969</td>
<td><strong>8.361</strong></td>
<td>0.252</td>
<td><strong>3.088</strong></td>
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<tr>
<td>RECACC</td>
<td>58.819</td>
<td>62.879</td>
<td>54.348</td>
<td>58.156</td>
<td>2.151</td>
<td>1.241</td>
<td><strong>2.035</strong></td>
</tr>
<tr>
<td>EORSRECACC</td>
<td>75.890</td>
<td>79.293</td>
<td>72.464</td>
<td>75.177</td>
<td>2.339</td>
<td>1.486</td>
<td><strong>2.091</strong></td>
</tr>
<tr>
<td>MISSTATED</td>
<td>39.920</td>
<td>33.610</td>
<td>44.300</td>
<td>42.210</td>
<td>2.014</td>
<td>2.669</td>
<td>-1.765</td>
</tr>
<tr>
<td>REASONABLE</td>
<td>4.480</td>
<td>4.910</td>
<td>4.220</td>
<td>4.300</td>
<td><strong>3.703</strong></td>
<td>0.615</td>
<td><strong>2.283</strong></td>
</tr>
<tr>
<td>INCTEST</td>
<td>4.990</td>
<td>4.760</td>
<td>5.090</td>
<td>5.110</td>
<td>0.715</td>
<td><strong>4.800</strong>*</td>
<td>-0.920</td>
</tr>
<tr>
<td>SUBCOUNT</td>
<td>3.560</td>
<td>3.420</td>
<td>3.480</td>
<td>3.700</td>
<td>0.954</td>
<td>0.648</td>
<td>-0.210</td>
</tr>
<tr>
<td>SUBHOURS</td>
<td>28.070</td>
<td>28.330</td>
<td>28.260</td>
<td>27.790</td>
<td>0.049</td>
<td>0.392</td>
<td>0.032</td>
</tr>
<tr>
<td>CONFIDENCE</td>
<td>4.390</td>
<td>4.850</td>
<td>4.350</td>
<td>4.090</td>
<td><strong>3.964</strong></td>
<td><strong>3.490</strong>*</td>
<td>1.521</td>
</tr>
<tr>
<td>INCONSISTENT</td>
<td>0.360</td>
<td>0.760</td>
<td>0.130</td>
<td>0.190</td>
<td><strong>11.434</strong></td>
<td><strong>22.454</strong>*</td>
<td><strong>3.752</strong></td>
</tr>
</tbody>
</table>

Bold items are significant at the 0.05 level.

Legend: See Table 8

* - A significant Levene’s test supports that the variable does not have equal variance between groups. The p-value for these items was based on a t-test not assuming equal variance.

Contrast key:

a – contrast professionals and masters students
b – contrast masters students and undergraduate students
c – contrast professionals and undergraduate students
Hypothesis 1

H1 predicts auditors with a more external encoding style will have greater memory accuracy of a client inquiry than auditors with a more internal encoding style. For tests of H1, encoding style score (ENCSTYLE) is examined as a continuous variable. H1 would be supported by a significant, negative relationship between ENCSTYLE and measures of memory accuracy, since a lower encoding style score represents a more external encoding style, without considering the note taking condition manipulation.

The first operationalization of memory accuracy is performance on a free recall task. A higher ACTRECALL or POSSRECALL score represents greater memory accuracy for each variable. According to Pearson correlations reported in Table 8, ENCSTYLE is not significantly correlated with ACTRECALL ($\rho = -0.066$, $p = 0.508$) or POSSRECALL ($\rho = -0.094$, $p = 0.343$). To test H1, I separately regressed ACTRECALL and POSSRECALL on ENCSTYLE controlling for PARTTYPE, AGE, and GENDER, with results reported in Table 10a. The coefficient of ENCSTYLE was not significant for either ACTRECALL ($b = -0.080$, $p = 0.476$) or POSSRECALL ($b = -0.015$, $p = 0.887$), failing to support H1.44

The second operationalization of memory accuracy is recognition accuracy (RECACC), measured by dividing the number of items correctly categorized on a recognition task by the total number of items in the task (12). Participants’ RECACC scores range from 16.670 to 91.670 with a mean of 58.819 out of a possible 100. According to Pearson correlations reported in Table 8, RECACC is not significantly correlated with ENCSTYLE ($\rho = -0.039$, $p = 0.697$). I regressed RECACC on ENCSTYLE controlling for PARTTYPE, AGE, and GENDER, with results

---

44 As mentioned earlier in this chapter, ACTRECALL does not have a normal distribution, which may affect the results of linear regression analyses. Separately, I transformed ACTRECALL by taking the Log10 of the scores; however, this did not correct the non-normality of the variable. I re-ran regression and ANCOVA analyses with the transformed variable. Untabulated results are not significant.
reported in Table 10b. The coefficient of ENCSTYLE was not significant (b=.053, p=.629), failing to support H1. Additionally, multivariate regression analysis of encoding style with all four memory accuracy dependent variables does not support H1 (F-test=.689, p=.601).

Table 10

Linear Regression Memory Accuracy Measures on Encoding Style

a. Recall Accuracy Measures

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Multivariate*</th>
<th>ACTRECALL</th>
<th>POSSRECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCSTYLE</td>
<td>F-test</td>
<td>p-value</td>
<td>Coefficient</td>
</tr>
<tr>
<td>ENCSTYLE</td>
<td>0.689</td>
<td>0.601</td>
<td>-0.080</td>
</tr>
<tr>
<td>Covariates:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td>4.389</td>
<td>&lt;.01</td>
<td>-0.012</td>
</tr>
<tr>
<td>AGE</td>
<td>0.847</td>
<td>0.499</td>
<td>-0.039</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.819</td>
<td>0.516</td>
<td>-0.063</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>-0.030</td>
<td></td>
<td>0.090</td>
</tr>
</tbody>
</table>

b. Recognition Accuracy Measures

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Masters students and Professionals, only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RECACC</td>
</tr>
<tr>
<td>ENCSTYLE</td>
<td>Coefficient</td>
</tr>
<tr>
<td>ENCSTYLE</td>
<td>0.053</td>
</tr>
<tr>
<td>Covariates:</td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td>0.110</td>
</tr>
<tr>
<td>AGE</td>
<td>0.130</td>
</tr>
<tr>
<td>GENDER</td>
<td>-0.151</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.011</td>
</tr>
</tbody>
</table>

* - Multivariate results are Pillai’s Trace statistic, including all participants and all four memory accuracy variables.
Legend: See Table 8
To further examine recognition accuracy, I created a less strict recognition accuracy score, explicit/summary accuracy (EORSRECACC). EORSRECACC is calculated in the same manner as RECACC except one difference: as long as participants did not code an “Explicitly stated” or “Valid summary” item as “new, not a valid summary”, or vice versa, the item was scored as accurate. EORSRECACC represents whether participants can distinguish information discussed by the client from new information not discussed, rather than also distinguishing between explicit statements and valid summaries. Participants’ EORSRECACC ranges from 41.670 to 100.000 with a mean of 75.890 out of a possible 100, which is an improvement in accuracy over the RECACC variable. According to Pearson correlations reported in Table 8, EORSRECACC is not significantly correlated with ENCSTYLE ($\rho=0.038$, $p=0.701$). I regressed EORSRECACC on ENCSTYLE while controlling for PARTTYPE, AGE, and GENDER, with results reported in Table 10b. The standardized coefficient of ENCSTYLE is not significant ($b=0.150$, $p=0.171$), failing to support H1.

As discussed in Chapter 2, encoding style represents how quickly the mind accesses encoding rules to interpret data. Encoding rules are developed over time with experience and knowledge; therefore, I reduced the sample to only masters students and professionals to determine whether relationships between the variables change when examining only the more knowledgeable participants. This limited sample of 56 participants included the 23 masters students and 33 professionals.\(^{45}\) I regressed EORSRECACC on ENCSTYLE while controlling for PARTTYPE, AGE, and GENDER, with results reported in Table 10b.\(^{46}\) The standardized coefficient of ENCSTYLE is not significant ($b=0.150$, $p=0.171$), failing to support H1.

\(^{45}\) Although not as experienced as professionals, I consider the masters students to be more experienced than undergraduate students because of their additional education. Additionally, 34.8 percent of the masters students completed an internship in public accounting. I further reduced the sample to only the professionals and ran regression analyses for each memory accuracy measure; however, no statistical significance resulted likely due to a lack of statistical power from the limited sample size of professionals.

\(^{46}\) I ran the regression analyses for each memory accuracy measure using only masters and professional participants. EORSRECACC is the only memory accuracy dependent variable for which the coefficient of ENCSTYLE is
coefficient of ENCSTYLE is positive and significant (b=.315, p=.034), suggesting a more internal encoding style is associated with greater memory accuracy. The positive coefficient fails to support H1; however, the statistical significance supports theory that how quickly the mind accesses schemata affects memory accuracy.

These results assume a linear relationship between encoding style and memory accuracy. Potentially, a curvilinear relationship could exist between encoding style and memory accuracy. Accessing schemata too quickly or too slowly (representing the polar ends of the encoding style continuum) may be detrimental to memory accuracy, while an encoding style closer to the middle of the continuum may benefit memory accuracy. I squared each participant’s encoding style score (ENCSTYSQR) and ran a multivariate regression and individual regressions of memory accuracy variables on ENCSTYSQR, ENCSTYLE while controlling for PARTTYPE, AGE, and GENDER. Untabulated results are not significant for ENCSTYSQR with either the full data set or the masters students and professionals only data, suggesting no curvilinear relationship exists.

Hypotheses 2 and 3

H2 predicts auditors who take notes during a client inquiry will have greater memory accuracy of a client inquiry than auditors who do not take notes. H3 predicts auditors who subsequently review notes taken during a client inquiry will have greater memory accuracy of a client inquiry than auditors who take but do not review notes. To test H2 and H3, I randomly assigned participants to one of three note taking conditions. As reported in Table 5, distribution of participants among conditions was fairly balanced for professionals and students. I conducted MANCOVA analyses with contrast coding of the dependent variables by

significant at the 0.05 level. The ENCSTYLE coefficient was marginally significant for RECACC with the reduced sample (untabulated b=.244, p=.097).
NOTETAKINGCONDITION with PARTTYPE, AGE, GENDER, NOTEABILITY, and TYPEABILITY as covariates. I added NOTEABILITY and TYPEABILITY as covariates due to the potential affect of an individual’s note taking or typing ability on the note taking process. H2 would be supported by a significant, positive contrast between the NN and NWoR means. H3 would be supported by a significant, positive contrast between the NWoR and NWiR means.

Results reported in Table 11a are that NOTETAKINGCONDITION does not have a significant main effect on ACTRECALL (F=.792, p=.456), POSSRECALL (F=.260, p=.771), RECACC (F=.626, p=.537), or EORSRECACC (F=2.264, p=.109), suggesting no difference in memory accuracy between NN, NWoR, and NWiR conditions. Additionally, LS Means contrast coding t-tests results reported in Table 11b do not show a significant increase in memory accuracy from NN to NWoR conditions or NWoR to NWiR conditions for any of the dependent variables, failing to support H2 and H3. The only significant difference is between the NN and NWiR conditions (t-test=2.139, p=.035) for the EORSRECACC variable, which is not a planned contrast. Surprisingly, the NWiR condition has significantly lower memory accuracy than the NN condition, which suggests taking and reviewing notes distracts participants, hindering memory accuracy (Piolat et al. 2005); however, this finding of note taking with review causing a hindrance in memory accuracy is not conclusive since the significant, negative contrast between NN and NWiR conditions with the full sample becomes non-significant when running the analysis with only the masters students and professionals. This possibly indicates that undergraduate students’ lack of experience or lesser note taking ability is affecting the results. Overall, the data suggests that note taking and review do not improve memory accuracy, contradicting note taking theory.
Analysis of Memory Accuracy by Note Taking Condition

a. ANCOVA of Memory Accuracy Variables by Note Taking Condition

<table>
<thead>
<tr>
<th>NOTETAKING CONDITION</th>
<th>Dependent Variable</th>
<th>Dependent Variable</th>
<th>Dependent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MANCOVA*</td>
<td>ACTRECALL</td>
<td>POSSRECALL</td>
<td>RECACC</td>
</tr>
<tr>
<td></td>
<td>F  p-value</td>
<td>F  p-value</td>
<td>F  p-value</td>
<td>F  p-value</td>
</tr>
<tr>
<td>NOTETAKING CONDITION</td>
<td>0.981 0.452</td>
<td>0.792 0.456</td>
<td>0.260 0.771</td>
<td>0.626 0.537</td>
</tr>
<tr>
<td>Covariate:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td>3.757 &lt;.01</td>
<td>0.034 0.855</td>
<td>11.911 &lt;.01</td>
<td>0.351 0.555</td>
</tr>
<tr>
<td>AGE</td>
<td>0.471 0.757</td>
<td>0.011 0.918</td>
<td>0.192 0.662</td>
<td>0.870 0.353</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.578 0.679</td>
<td>0.752 0.388</td>
<td>0.666 0.416</td>
<td>1.348 0.249</td>
</tr>
<tr>
<td>NOTEABILITY</td>
<td>1.267 0.289</td>
<td>1.020 0.315</td>
<td>1.753 0.189</td>
<td>1.170 0.282</td>
</tr>
<tr>
<td>TYPEABILITY</td>
<td>1.417 0.235</td>
<td>0.096 0.757</td>
<td>0.781 0.379</td>
<td>2.930 0.090</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>-0.042</td>
<td>0.105</td>
<td>0.018</td>
<td>0.032</td>
</tr>
</tbody>
</table>

b. Means of Memory Accuracy Variable by Note Taking Condition

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>ACTRECALL</th>
<th>POSSRECALL</th>
<th>RECACC</th>
<th>EORSRECACC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>t-test p-value</td>
<td>Mean</td>
<td>t-test p-value</td>
</tr>
<tr>
<td>NN (n=35)</td>
<td>80.964</td>
<td>17.329</td>
<td>60.000</td>
<td>78.810</td>
</tr>
<tr>
<td>NWoR (n=37)</td>
<td>85.827</td>
<td>0.337</td>
<td>59.685</td>
<td>75.901</td>
</tr>
<tr>
<td>NWiR (n=31)</td>
<td>86.825</td>
<td>0.788</td>
<td>56.452</td>
<td>72.581</td>
</tr>
<tr>
<td>Overall Mean</td>
<td>84.475</td>
<td>16.399</td>
<td>58.819</td>
<td>75.890</td>
</tr>
</tbody>
</table>

*- MANCOVA F-test is Pillai’s trace statistic.
**- NWiR is significantly lower EORSRECACC than the NN condition (t=2.139, p=.035).
Legend: See Table 8
Hypotheses 4 and 5

H4 and H5 predict an interaction between the note taking functions and encoding style. To examine H4 and H5, I median-split the sample by encoding style to create a categorical variable; participants with an encoding style score less (greater) than the median were coded as external (internal) encoding style type (ENCTYPE). The median encoding style score for the sample was 18, resulting in 52 external encoders and 51 internal encoders. I conducted a 3x2 full-factorial ANCOVA for each memory accuracy variable with NOTETAKINGCONDITION and ENCTYPE as factors, and PARTTYPE, AGE, GENDER, NOTEABILITY, and TYPEABILITY as covariates. Since H4 and H5 predict an ordinal interaction, the interaction term does not need to be significant; rather, the hypotheses are examined through contrast coding between cells. For H4 to be supported, the contrast between NN and NWoR conditions for external ENCTYPE participants should be negative and significant, while the same contrast for internal ENCTYPE participants should be positive and significant. For H5 to be supported, the contrast between NWoR and NWiR conditions should be positive and significant for both encoding style types. Results are reported in Table 12, with ANCOVA analysis in 12a, cell means in 12b and contrasts in 12c.

Main effects for ENCTYPE, NOTETAKINGCONDITION, and the interaction term are not statistically significant for any of the memory accuracy variables. More importantly for testing H4 and H5, LS Means contrast coding yields no significant differences, failing to support H4 and H5. I then conducted exploratory contrasts between conditions to determine whether the interaction results in any significant differences. No contrasts were significant for ACTRECALL, POSSRECALL, and RECACC. EORSRECACC results show that internal encoders in the NN condition (mean=79.546) have significantly higher EORSRECACC than
Table 12

Analysis of the Interaction between Note Taking Condition and Encoding Style Type

a. ANCOVA of Memory Accuracy Variables by Note Taking Condition and Encoding Style Type

<table>
<thead>
<tr>
<th></th>
<th>MANCOVA (^*)</th>
<th>ACTRECALL</th>
<th>POSSRECALL</th>
<th>REACC</th>
<th>EORSRECACC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p-value</td>
<td>F</td>
<td>p-value</td>
<td>F</td>
</tr>
<tr>
<td><strong>NOTETAKING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONDITION</td>
<td>0.744</td>
<td>0.653</td>
<td>0.679</td>
<td>0.510</td>
<td>0.330</td>
</tr>
<tr>
<td><strong>ENCTYPE</strong></td>
<td>0.576</td>
<td>0.681</td>
<td>0.584</td>
<td>0.447</td>
<td>0.094</td>
</tr>
<tr>
<td><strong>INTERACTION</strong></td>
<td>0.882</td>
<td>0.533</td>
<td>1.432</td>
<td>0.244</td>
<td>0.308</td>
</tr>
<tr>
<td><strong>Covariate:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td>3.836</td>
<td>&lt;.01</td>
<td>0.029</td>
<td>0.866</td>
<td>10.861</td>
</tr>
<tr>
<td>AGE</td>
<td>0.579</td>
<td>0.679</td>
<td>0.119</td>
<td>0.731</td>
<td>0.242</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.607</td>
<td>0.659</td>
<td>0.601</td>
<td>0.440</td>
<td>0.555</td>
</tr>
<tr>
<td>NOTEABILITY</td>
<td>1.308</td>
<td>0.273</td>
<td>0.507</td>
<td>0.478</td>
<td>1.570</td>
</tr>
<tr>
<td>TYPEABILITY</td>
<td>1.348</td>
<td>0.259</td>
<td>0.473</td>
<td>0.493</td>
<td>0.386</td>
</tr>
</tbody>
</table>

Adjusted R\(^2\) = -0.036 0.083 -0.001 0.039

*- MANCOVA F-test is Pillai’s trace statistic.
Legend: See Table 8.
Table 12 continued

b. Means of Memory Accuracy Variables by Cell

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>Encoding Style Type</th>
<th>Group Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External (n=52)</td>
<td>Internal (n=51)</td>
</tr>
<tr>
<td>NN (n=35)</td>
<td>84.751</td>
<td>78.726</td>
</tr>
<tr>
<td>NWoR (n=37)</td>
<td>90.856</td>
<td>79.911</td>
</tr>
<tr>
<td>NWiR (n=31)</td>
<td>83.551</td>
<td>91.009</td>
</tr>
<tr>
<td>Group Mean</td>
<td>86.661</td>
<td>82.246</td>
</tr>
</tbody>
</table>

Means of POSSRECALL by Cell

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>Encoding Style Type</th>
<th>Group Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External (n=52)</td>
<td>Internal (n=51)</td>
</tr>
<tr>
<td>NN (n=35)</td>
<td>20.067</td>
<td>15.712</td>
</tr>
<tr>
<td>NWoR (n=37)</td>
<td>17.065</td>
<td>14.322</td>
</tr>
<tr>
<td>NWiR (n=31)</td>
<td>14.760</td>
<td>18.116</td>
</tr>
<tr>
<td>Group Mean</td>
<td>16.973</td>
<td>15.814</td>
</tr>
</tbody>
</table>

Means of RECACC by Cell

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>Encoding Style Type</th>
<th>Group Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External (n=52)</td>
<td>Internal (n=51)</td>
</tr>
<tr>
<td>NN (n=35)</td>
<td>62.180</td>
<td>58.712</td>
</tr>
<tr>
<td>NWoR (n=37)</td>
<td>62.500</td>
<td>56.373</td>
</tr>
<tr>
<td>NWiR (n=31)</td>
<td>54.825</td>
<td>59.028</td>
</tr>
<tr>
<td>Group Mean</td>
<td>59.615</td>
<td>58.007</td>
</tr>
</tbody>
</table>

Means of EORSRECACC by Cell

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>Encoding Style Type</th>
<th>Group Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External (n=52)</td>
<td>Internal (n=51)</td>
</tr>
<tr>
<td>NN (n=35)</td>
<td>77.564</td>
<td>79.546</td>
</tr>
<tr>
<td>NWoR (n=37)</td>
<td>77.917</td>
<td>73.529</td>
</tr>
<tr>
<td>NWiR (n=31)</td>
<td>70.614</td>
<td>75.694</td>
</tr>
<tr>
<td>Group Mean</td>
<td>75.160</td>
<td>76.634</td>
</tr>
</tbody>
</table>

Legend: See Table 8.
### Table 12 continued

c. LS Means Planned Contrast Testing

<table>
<thead>
<tr>
<th>Planned Contrast</th>
<th>ACTRECALL</th>
<th>POSSRECALL</th>
<th>RECACC</th>
<th>EORSREACCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN-Ext vs NN-Int</td>
<td>-1.033</td>
<td>-.923</td>
<td>.028</td>
<td>1.038</td>
</tr>
<tr>
<td></td>
<td>(.305)</td>
<td>(.359)</td>
<td>(.978)</td>
<td>(.302)</td>
</tr>
<tr>
<td>NWoR-Ext vs NWoR-Int</td>
<td>-1.507</td>
<td>.054</td>
<td>-.709</td>
<td>-.663</td>
</tr>
<tr>
<td></td>
<td>(.135)</td>
<td>(.957)</td>
<td>(.480)</td>
<td>(.509)</td>
</tr>
<tr>
<td>NWiR-Ext vs NWiR-Int</td>
<td>.851</td>
<td>.410</td>
<td>.796</td>
<td>1.575</td>
</tr>
<tr>
<td></td>
<td>(.397)</td>
<td>(.683)</td>
<td>(.428)</td>
<td>(.119)</td>
</tr>
<tr>
<td>H4 Ext: NN vs NWoR</td>
<td>.599</td>
<td>-1.028</td>
<td>-.014</td>
<td>.108</td>
</tr>
<tr>
<td></td>
<td>(.550)</td>
<td>(.307)</td>
<td>(.989)</td>
<td>(.914)</td>
</tr>
<tr>
<td>H4 Int: NN vs NWoR</td>
<td>.231</td>
<td>-.018</td>
<td>-.781</td>
<td>-1.731</td>
</tr>
<tr>
<td></td>
<td>(.818)</td>
<td>(.986)</td>
<td>(.437)</td>
<td>(.087)</td>
</tr>
<tr>
<td>H5 Ext: NWoR vs NWiR</td>
<td>-.825</td>
<td>.158</td>
<td>-1.228</td>
<td>-1.760</td>
</tr>
<tr>
<td></td>
<td>(.412)</td>
<td>(.875)</td>
<td>(.223)</td>
<td>(.082)</td>
</tr>
<tr>
<td>H5 Int: NWoR vs NWiR</td>
<td>1.466</td>
<td>.497</td>
<td>.365</td>
<td>.646</td>
</tr>
<tr>
<td></td>
<td>(.146)</td>
<td>(.620)</td>
<td>(.716)</td>
<td>(.520)</td>
</tr>
</tbody>
</table>

Values in table t-test scores, values in parentheses are related p-values.

Key:
- Ext: external encoding style type (encoding style score below the median);
- Int: internal encoding style type (encoding style score above the median);
- NN: no note taking condition;
- NWoR: note taking without review condition;
- NWiR: note taking with review condition.
external encoders in the NWiR condition (mean=70.614) (t=-2.864, p<.01), supporting that the interaction causes a significant difference between the highest and lowest EORSRECACC cells. The interaction cell means for EORSRECACC are represented graphically in Figure 3 below. The hypothesized interaction of encoding style and note taking graphed in Figure 1 on page 39 is also displayed below for comparison. While the interaction of encoding style and note taking causes a significant difference in memory accuracy between two cells, the differences are not in line with hypotheses and are not consistent between measures of memory accuracy. Overall, H4 and H5 are not supported. Conclusions do not change when analyzed with only the masters students and professionals.

![Figure 3](image-url)

**Figure 3**

Results of Interaction Between Encoding Style and Note Taking on Explicit/Summary Accuracy

<table>
<thead>
<tr>
<th>Note Taking Condition</th>
<th>External Encoding Style Type</th>
<th>Internal Encoding Style Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>No notes (NN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes wo review (NWoR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes with review (NWiR)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis 6

H6 predicts greater memory accuracy of a client inquiry will result in judgments more consistent with account evidence presented during a client inquiry. In the inquiry video, the client discussed accounts receivable activity in a positive manner, although five pieces of evidence presented by the client were inconsistent with prior financial information. If a participant does not notice the inconsistent information, then a more accurate memory of the inquiry likely results in more favorable judgments for the client. Also, participants’ assessment of financial condition may affect judgments including probability of material misstatement, supported by significant correlations reported in Table 8. Specifically, after controlling for identification of inconsistent evidence and assessment of financial condition, participants with greater memory accuracy of the inquiry should judge a lower probability of misstatement in the account, the client’s explanation as more reasonable, and a lower likelihood to increase testing.
As reported in Table 9, participants judged the probability of material misstatement as low (MISSTATED) (mean=39.920), the client’s explanation as reasonable (REASONABLE) (mean=4.480), are likely to increase testing (INCTEST) (mean=4.990), selected multiple substantive procedures (SUBCOUNT) (mean=3.560), and selected substantive procedures hours to maximize the 30 hours of budgeted time (SUBHOURS) (mean=28.070). To test H6, I conducted multivariate and individual regression analyses of the five judgments on measures of memory accuracy, while controlling for PARTTYPE, ASSESS, INCONSISTENT, AGE, and GENDER.\(^{47}\) Results are reported in Table 13. Multivariate F-tests are significant for RECACC (F=3.058, p=.013) and EORSRECACC (F=3.399, p<.01), but not for ACTRECALL (F=.863, p=.509) or POSSRECALL (F=.916, p=.474). For individual regressions, the coefficient is positive and significant for the effect of RECACC on REASONABLE (b=0.248, p<0.01), supporting expectations in H6. Additionally, the coefficients are significant for the effects of EORSRECACC on MISSTATED (b=-0.297, p<0.01), REASONABLE (b=0.305, p<0.01), and INCTEST (b=-0.214, p=0.036), also supporting H6. The effects of ACTRECALL and POSSRECALL on the five judgments are not significant, so results vary depending on operationalization of memory accuracy. Conducting the individual regressions with only the masters students and professional participants does not change significance or direction of the coefficients, although the multivariate F-tests for RECACC and EORSRECACC become non-significant.

\(^{47}\) If a participant identified any instances of inconsistent evidence, the instances were stored and retrieved from memory. As such, the number of inconsistencies identified may moderate the impact of memory on judgment. I created interaction variables with INCONSISTENT and each measure of memory accuracy. I then included the interaction variables in each respective regression analysis. Untabulated results are not significant for any interaction variable, and the affects of memory on judgment were not changed.
# Table 13

Regression of Audit Judgment Variables on Memory Accuracy Variables

<table>
<thead>
<tr>
<th>Independent variable:</th>
<th>Multivariate*</th>
<th>Dependent Variable</th>
<th>F-test</th>
<th>p-value</th>
<th>MISSTATED</th>
<th>REASONABLE</th>
<th>INCTEST</th>
<th>SUBCOUNT</th>
<th>SUBHOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTRECALL</td>
<td></td>
<td></td>
<td>0.863</td>
<td>0.509</td>
<td>-0.02 (.834)</td>
<td>-0.064 (.480)</td>
<td>0.165 (.093)</td>
<td>0.055 (.582)</td>
<td>-0.015 (.878)</td>
</tr>
<tr>
<td>Control variables:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td></td>
<td></td>
<td>2.293</td>
<td>0.052</td>
<td>-0.157 (.130)</td>
<td><strong>0.245 (.014)</strong></td>
<td>-0.151 (.155)</td>
<td>-0.146 (.174)</td>
<td>0.043 (.684)</td>
</tr>
<tr>
<td>ASSESS</td>
<td><strong>5.860</strong></td>
<td></td>
<td>&lt;.01</td>
<td></td>
<td><strong>-0.335 (&lt;.01)</strong></td>
<td><strong>0.418 (&lt;.01)</strong></td>
<td><strong>-0.227 (.023)</strong></td>
<td><strong>-0.225 (.027)</strong></td>
<td><strong>-0.304 (&lt;.01)</strong></td>
</tr>
<tr>
<td>INCONSISTENT</td>
<td>0.848</td>
<td></td>
<td>0.519</td>
<td></td>
<td>0.070 (.505)</td>
<td>-0.091 (.362)</td>
<td>0.087 (.416)</td>
<td>0.086 (.430)</td>
<td>-0.070 (.507)</td>
</tr>
<tr>
<td>AGE</td>
<td>1.021</td>
<td></td>
<td>0.410</td>
<td></td>
<td>-0.068 (.492)</td>
<td>-0.032 (.734)</td>
<td>0.073 (.470)</td>
<td>-0.020 (.846)</td>
<td>0.127 (.205)</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.491</td>
<td></td>
<td>0.782</td>
<td></td>
<td>0.066 (.486)</td>
<td>0.018 (.840)</td>
<td>0.089 (.360)</td>
<td>-0.098 (.326)</td>
<td>-0.081 (.403)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.093</td>
<td>0.174</td>
<td>0.049</td>
<td>0.019</td>
<td>0.066</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variable:</th>
<th>Multivariate*</th>
<th>Dependent Variable</th>
<th>F-test</th>
<th>p-value</th>
<th>MISSTATED</th>
<th>REASONABLE</th>
<th>INCTEST</th>
<th>SUBCOUNT</th>
<th>SUBHOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSSRECALL</td>
<td></td>
<td></td>
<td>0.916</td>
<td>0.474</td>
<td><strong>0.002 (.986)</strong></td>
<td>-0.083 (.424)</td>
<td>0.169 (.136)</td>
<td>0.133 (.243)</td>
<td>0.021 (.848)</td>
</tr>
<tr>
<td>Control variables:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTTYPE</td>
<td></td>
<td></td>
<td><strong>2.765</strong></td>
<td><strong>0.023</strong></td>
<td>-0.157 (.144)</td>
<td><strong>0.268 (.010)</strong></td>
<td>-0.199 (.072)</td>
<td>-0.182 (.102)</td>
<td>0.038 (.729)</td>
</tr>
<tr>
<td>ASSESS</td>
<td><strong>5.898</strong></td>
<td></td>
<td>&lt;.01</td>
<td></td>
<td><strong>0.337 (&lt;.01)</strong></td>
<td><strong>0.431 (&lt;.01)</strong></td>
<td><strong>-0.251 (.015)</strong></td>
<td><strong>-0.250 (.017)</strong></td>
<td><strong>-0.310 (&lt;.01)</strong></td>
</tr>
<tr>
<td>INCONSISTENT</td>
<td>0.563</td>
<td></td>
<td>0.728</td>
<td></td>
<td>0.067 (.534)</td>
<td>-0.074 (.476)</td>
<td>0.055 (.622)</td>
<td>0.054 (.629)</td>
<td>-0.077 (.482)</td>
</tr>
<tr>
<td>AGE</td>
<td>1.011</td>
<td></td>
<td>0.416</td>
<td></td>
<td>-0.067 (.498)</td>
<td>-0.038 (.686)</td>
<td>0.085 (.405)</td>
<td>-0.009 (.929)</td>
<td>0.129 (.199)</td>
</tr>
<tr>
<td>GENDER</td>
<td>0.478</td>
<td></td>
<td>0.792</td>
<td></td>
<td>0.068 (.478)</td>
<td>0.020 (.826)</td>
<td>0.084 (.391)</td>
<td>-0.098 (.323)</td>
<td>-0.080 (.411)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.093</td>
<td>0.175</td>
<td>0.043</td>
<td>0.030</td>
<td>0.066</td>
</tr>
</tbody>
</table>

* - Multivariate results are Pillai’s Trace statistic, including all participants and all five judgment variables.
Values in table are standardized beta coefficients except multivariate results; values in parentheses are p-values.
Cells in bold are significant at the 0.05 level.
Legend: See Table 8
Table 13 continued

<table>
<thead>
<tr>
<th>Independent variable:</th>
<th>F-test</th>
<th>p-value</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RECACC</strong></td>
<td>3.058</td>
<td>0.013</td>
<td>MISSTATED REASONABLE INCTEST SUBCOUNT SUBHOURS</td>
</tr>
<tr>
<td>Control variables:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PARTTYPE</strong></td>
<td>2.211</td>
<td>0.060</td>
<td>-.143 (.164) .223 (.021) -.160 (.139) -.146 (.179) .059 (.567)</td>
</tr>
<tr>
<td><strong>ASSESS</strong></td>
<td>4.459</td>
<td>&lt;.01</td>
<td>.302 (&lt;.01) .350 (&lt;.01) -.225 (.031) -.214 (.041) -.262 (.010)</td>
</tr>
<tr>
<td><strong>INCONSISTENT</strong></td>
<td>0.943</td>
<td>0.457</td>
<td>.064 (.535) -.089 (.353) .102 (.345) .090 (.408) -.076 (.463)</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td>1.185</td>
<td>0.323</td>
<td>-.050 (.611) -.062 (.500) .064 (.535) -.018 (.863) .149 (.135)</td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td>0.673</td>
<td>0.645</td>
<td>.051 (.592) .052 (.555) .085 (.393) -.104 (.300) -.101 (.294)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.111</td>
<td>0.228</td>
<td>0.022 0.016 0.094</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variable:</th>
<th>F-test</th>
<th>p-value</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EORSRECACC</strong></td>
<td>3.399</td>
<td>&lt;.01</td>
<td>MISSTATED REASONABLE INCTEST SUBCOUNT SUBHOURS</td>
</tr>
<tr>
<td>Control variables:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PARTTYPE</strong></td>
<td>2.048</td>
<td>0.079</td>
<td>-.119 (.229) .209 (.028) -.129 (.223) -.139 (.198) .062 (.553)</td>
</tr>
<tr>
<td><strong>ASSESS</strong></td>
<td>4.587</td>
<td>&lt;.01</td>
<td>.270 (&lt;.01) .344 (&lt;.01) -.166 (.100) -.205 (.048) -.272 (&lt;.01)</td>
</tr>
<tr>
<td><strong>INCONSISTENT</strong></td>
<td>0.888</td>
<td>0.493</td>
<td>.052 (.598) -.080 (.393) .090 (.397) .087 (.423) -.079 (.448)</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td>1.133</td>
<td>0.348</td>
<td>-.033 (.723) -.065 (.467) .094 (.352) -.013 (.897) .144 (.148)</td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td>0.515</td>
<td>0.764</td>
<td>.026 (.774) .064 (.459) .050 (.608) -.110 (.271) -.101 (.296)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.177</td>
<td>0.259</td>
<td>0.064 0.020 0.088</td>
</tr>
</tbody>
</table>

* - Multivariate results are Pillai’s Trace statistic, including all participants and all five judgment variables. Values in table are standardized beta coefficients except multivariate results; values in parentheses are p-values. Cells in bold are significant at the 0.05 level. Legend: See Table 8
Overall, these findings suggest an increase in an auditor’s memory accuracy results in judging the client’s explanation as more reasonable, the probability of material misstatement as lower, and likelihood to increase testing as lower, supporting H6. This conclusion is limited to memory accuracy measured through a recognition task. When participants are asked to recall information without external cues, the effect is not supported. The lack of a significant relationship between memory accuracy and selection of substantive procedures indicates that the inquiry evidence in the current case did not impact the selection of procedures. While inquiry evidence affects later judgments and performance of procedures in actual audits (Wright and Ashton 1989), the nature of choices in the current case possibly do not reflect the desired options for a judgment related to selection of substantive procedures.

Hypothesis 7

Hypothesis 7 consists of three sub hypotheses: H7a, H7b, H7c. H7a predicts an indirect effect of encoding style on audit judgment. H7b predicts an indirect effect of taking but not reviewing notes on audit judgment. H7c predicts an indirect effect of taking and reviewing notes on audit judgment. Based on results of testing H2 and H3, note taking is not a significant predictor of memory accuracy. As such, I do not test H7b or H7c, since an indirect effect requires a direct effect of an independent variable on a mediator to exist. Based on results of testing H1, I test H7a with ENCLSTYLE as the independent variable and EORSRECACC as the mediator, using only the masters students and professionals as the sample. I utilized the Preacher and Hayes SPSS Macro for Multiple Mediation to conduct a Sobel test for indirect effects (Preacher and Hayes 2008). The procedure calculates the direct effect of an independent variable on a mediator, the direct effect of a mediator on a dependent variable, and multiples the two direct effects to obtain an indirect effect. Bootstrapping is applied to this process with 1,000
selections from the sample, with replacement, to approximate a standardized indirect effect and standard error for the sample. The indirect effect is then divided by the standard error to obtain a Z-score with an associated p-value. If the p-value is less than 0.05, the indirect effect is considered statistically significant. The sign for the Z-score represents directionality of the indirect effect, either positive or negative. Due to the design of the script, each dependent variable is tested separately.

Results of the tests are reported in Table 14. The indirect effect of ENCSTYLE on REASONABLE (p=.046) is positive and significant, while the indirect effect of ENCSTYLE on INCTEST (p=.048) is negative and significant. Additionally, the indirect effects of ENCSTYLE on MISSTATED (p=.083) and SUBCOUNT (p=.096) are negative and marginally significant. These results may be interpreted as participants with a more internal encoding style judging the client’s explanation as more reasonable, a lower probability of misstatement, a lower likelihood of increasing testing, and selection of fewer substantive procedures, each through having a greater memory accuracy of the client inquiry. While the significant results support that encoding style indirectly effects audit judgments through memory accuracy, the directionality is opposite of that hypothesized in H7a; therefore, H7a is not supported.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Std Indirect Effect</th>
<th>S.E.</th>
<th>Z-score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISSTATED</td>
<td>-0.348</td>
<td>0.251</td>
<td>-1.388</td>
<td>0.083</td>
</tr>
<tr>
<td>REASONABLE</td>
<td>0.024</td>
<td>0.014</td>
<td>1.681</td>
<td>0.046</td>
</tr>
<tr>
<td>INCTEST</td>
<td>-0.028</td>
<td>0.017</td>
<td>-1.665</td>
<td>0.048</td>
</tr>
<tr>
<td>SUBCOUNT</td>
<td>-0.013</td>
<td>0.010</td>
<td>-1.306</td>
<td>0.096</td>
</tr>
<tr>
<td>SUBHOURS</td>
<td>-0.100</td>
<td>0.086</td>
<td>-1.154</td>
<td>0.124</td>
</tr>
</tbody>
</table>

Control variables: PARTTYPE, GENDER, AGE
Legend: See Table 8
CHAPTER 6

DISCUSSION

Summary

Client inquiry is a cognitively complex task requiring auditors to simultaneously listen to a client, discern important evidence, encode evidence to memory, develop relevant follow-up questions, and observe non-verbal cues. This complexity presents potential problems for auditors to accurately gather evidence from inquiries, a fundamental audit procedure; however, no research examines auditor acquisition of evidence from client inquiry. Client inquiry is an important area to research due to the ubiquitous use of inquiries in the audit process.

To further understand auditor performance of client inquiries, I first interviewed six audit partners or senior managers regarding how auditors plan, perform, and document inquiries in practice. I then designed and conducted a video-based experiment with 33 senior auditors, 23 masters-level students, and 47 undergraduate-level students. I examined whether encoding style and note taking affect auditor memory accuracy of an inquiry, and whether memory accuracy affects ensuing audit judgments.

I hypothesized that participants with a more external encoding style would have greater memory accuracy than participants with a more internal encoding style. Contrary to theory, I find that participants with a more internal encoding style have greater memory accuracy than participants with a more external encoding style. I believe this finding is due to the cognitive complexity of a client inquiry compared to the abstract tasks utilized in prior research on encoding style (Dehon et al. 2011). In the contextual richness of a client inquiry in audio-visual form, participants with a more internal encoding style appear to quickly utilize schemata to manage the complexity, resulting in improved memory accuracy. Participants with a more
external encoding style were likely overwhelmed by the amount of information being processed without quick utilization of schemata. This finding is significant because it may extend the understanding of auditors’ use of schemata in task performance. Not only does the presence of schemata affect an experienced auditor’s performance, but also how quickly an auditor accesses the schemata may affect information noticed and remembered. Additionally, this finding extends the robustness and generalizability of the encoding style construct to a more information robust, professional environment task.

Second, I hypothesized that taking and subsequently reviewing notes of a client inquiry would result in incrementally greater memory accuracy than not taking or subsequently reviewing notes. Results do not support that taking and subsequently reviewing notes benefits memory accuracy of a client inquiry. Rather, I do find a statistically significant contrast suggesting note taking and review has a detrimental effect on memory accuracy compared to not taking notes. Prior research is mixed regarding whether note taking and review improves or hinders memory accuracy, with some researchers positing the physical act of note taking distracts a note taker from the message being presented, particularly in an audio-visual modality (Kobayashi 2005; Piolat et al. 2005). I expected professional auditors and accounting students to be well practiced at taking notes, allowing for note taking to be beneficial; however, results suggest that taking notes distracts both students and professional auditors in their memory accuracy. This finding is concerning since all 33 professional auditors reported that they take notes during client inquiries in practice, and each interviewee stated that he or she encourages less-experienced auditors to take notes.

Third, I hypothesized that encoding style and note taking would interact to affect memory accuracy through an ordinal interaction. Results do not support the hypotheses; however, a
statistically significant difference in the results suggests the factors do interact. The overall non-significance is possibly due to a lack of statistical power from a small sample size. A larger sample size of professionals may provide clearer results.

Fourth, I hypothesized that memory accuracy of a client inquiry would affect ensuing audit judgments. Findings support my hypothesis. Participants with greater memory accuracy of a client inquiry judged the client’s explanation as more reasonable, the probability of material misstatement as lower, and were less likely to increase substantive testing, while controlling for identification of inconsistent evidence and assessment of financial condition. During the inquiry, the client spoke about the accounts receivable activity in a positive manner although background financial information suggested otherwise; therefore, more accurate memory of the inquiry resulted in judgments favorable toward the client. This is not to suggest that accurate memory of a client inquiry is not desirable. Rather, this finding supports the potential of a client employee to be persuasive in a face-to-face inquiry. If auditors do not notice inconsistencies being discussed by a client employee, or consider the financial condition of the company, then higher memory accuracy of the inquiry may result in judgments favorable toward the client, even when unwarranted. Unfortunately, auditors may not have the time to identify inconsistencies during inquiries due to the complex nature of inquiries compared to other audit tasks.

Finally, I hypothesized that encoding style and note taking would have indirect effects on ensuing audit judgments through their effect on memory accuracy. Results support this hypothesis for the indirect effect of encoding style on reasonableness of the client’s explanation and likelihood to increase substantive testing, although this result is contingent upon the operationalization and calculation of memory accuracy.
Limitations

This study has several limitations. First, results presented in this study are based on a sample size of 103 participants, of which only 33 are senior auditors. Senior auditors are the target group for the study due to their experience and likelihood of having task-relevant schemata. The senior auditor participants differed significantly from masters and undergraduate student participants in several measures, suggesting that a larger sample size of professionals may alter the findings and conclusions discussed here.

Second, while I attempted to simulate the cognitive complexity of a face-to-face client inquiry using a video, which controls for potential confounds such as voice inflection and speaking rate, participants did not interact with a client employee. Because of this, the results should not be generalized directly to in-person client inquiries, which require interaction. With that said, I believe the experimental design is biased against results since an in-person inquiry would be more complex and contextually rich than a video simulation, potentially increasing the effects examined in this study.

Third, all participants completed the study at remote locations, which prohibited me from monitoring participant performance. This creates two limitations. First, I could not restrict participants from pausing or re-watching the video to improve memory or note taking. I provided instructions informing participants to treat the video as a live inquiry by not pausing or re-watching the video. Second, I could not observe whether participants in the no note taking condition took hand-written notes on paper during the video. I provided instructions requesting participants in this condition to please not take notes during the inquiry.

Fourth, I designed the study to be online, but 11 professional participants completed the study on paper due to firm preference. The professional participants who completed the study on
paper hand-wrote notes while online participants typed notes. This difference in method may slightly affect the results of note taking although the online and paper groups do not differ with statistical significance in any measure.

Fifth, auditors in the note taking with subsequent review condition did not have access to notes during the recall and recognition tasks. In practice, any notes taken should be available during subsequent retrieval of information from memory. I used this experimental design so all participants completed the free recall task without external cues present.

Lastly, performance on the free recall task is limited to participant effort. The mean number of ideas from the inquiry accurately recalled by participants is 7.379 of a possible 46 communicated by the client. While I did examine participant effort through motivation measures, I am unable to determine whether the lack of ideas recalled is due to limited memory, or a lack of effort to list all items recalled. Specific documentation instructions, or the threat of review by a superior, may motivate participants to type/write more ideas in the recall input box.

Future Research

The findings of the study identify multiple areas of future research regarding client inquiries. First, studies should examine acquisition of evidence from a client inquiry in different scenarios such as planning, complex estimates, internal control walkthroughs, or tax inquiries. Inquiry plays a vital role throughout audit engagements, and auditors’ performance and information processing may differ between tasks. Additionally, issues such as question development, question framing, or task framing may affect the quality of evidence auditors gather from inquiries.

Second, more audit research studies should deliver information through audio-visual modalities such as video or in person. Client persuasiveness during a client inquiry may be
amplified in a face-to-face interaction due to the influence of body language, voice inflection, and overall demeanor of the employee. Understanding whether any of these factors affects auditor acquisition of evidence and resulting judgments is of interest.

Third, regarding schemata, does the effect of encoding style change when an auditor with an industry specialization moves to an unfamiliar industry? Encoding style functions through the development and initiation of encoding rules within schemata; where encoding rules represent ‘how to’ knowledge. If industry specific encoding rules develop over time, the effect of encoding style may be moderated when there is good or poor fit between an auditor’s schemata and characteristics of the task.

Fourth, since auditors often take notes in practice, and I find note taking hinders memory accuracy, research should examine ways to improve auditor note taking. Based on the current findings, note taking during the inquiry did not benefit participants’ memory accuracy. Delaying note taking until immediately after inquiries may allow auditors to focus during inquiries and ‘dump’ his or her memory to notes after the inquiry, increasing note taking effectiveness. As discussed in Chapter 3, interviewees stated they encourage associates and seniors to take notes; however, the firms do not train auditors in note taking or writing shorthand. Training auditors how to structure notes or write shorthand, rather than full sentences, could reduce the amount of distraction auditors experience during inquiries.

Lastly, a failure to identify inconsistencies during client inquiries may lead to inadequate follow-up questions and/or corroborating procedures. The mean number of inconsistent evidence items noted by professional participants in the study was less than one out of a possible five in the inquiry. This result should be alarming for practitioners if it reflects practice. In addition to affecting corroborating procedures, auditor identification of inconsistent evidence during an
inquiry is likely to reduce the persuasiveness of a client inquiry. Thus, factors affecting auditor identification of inconsistencies during a client inquiry is an important area of investigation.

Conclusion

In conclusion, I have examined and found support that encoding style, a low-level cognitive function determining how quickly individuals access schemata, and note taking, a common aspect of auditor performance of client inquiries, affect auditor memory accuracy of a client inquiry. Although the findings do not support hypotheses suggested by theory, the findings suggest further research in the topic is warranted. Additionally, I find support that auditor memory accuracy affects resulting audit judgments including reasonableness of the client’s explanation, probability of material misstatement in the account, and likelihood of increasing substantive testing. These findings may have implications for the accounting and auditing literature, as well as auditors in practice, regarding auditor acquisition of evidence from client inquiries.
APPENDIX A

METHODOLOGIES USED TO EXAMINE ENCODING RULES
Research studies have utilized multiple types of procedures to support the development and use of encoding rules. I discuss three of these procedures below.

Brain scan procedure (Lewicki et al. 1989). This procedure contains a learning phase and testing phase. In the learning phase, participants are shown 36 brain scans (patterns of computer graphics resembling the shape of a brain) and listen to the experimenter discuss characteristics of the intelligence of each brain shown in the scan. The stimulus material contains a (nonsalient) covariation between the relative frequency of a particular graphics character in a brain scan and whether the respective individual is described as intelligent. Participants are expected to acquire a tendency to encode intelligence of a person on the basis of the manipulated subtle features of the scan. During the testing phase, participants view another 80 brain scans without any verbal descriptions from the experimenter and were asked to rate the respective person’s intelligence based on “intuitive feelings”. Results are that participants become more accurate at identifying intelligence from the brain scans over multiple testing segments. However, in discussions with participants immediately following the exercise, none are able to explain the actual covariation identified in the scans, supporting the existence of learned encoding rules. Additionally, they state to have used “intuitive feelings” but cannot articulate the origins of those feelings, supporting the nonconscious nature of the learning that occurred.

False language task (Lewicki et al. 1989). This task also consists of a learning phase and testing phase. In the learning phase, participants sequentially view 80 words from a computer-generated language (participants are led to believe the language is Polynesian), along with a category for the word (emotion, food, a tool, or a person). The stimulus material includes a nonsalient covariation between location of the word on the screen and the category (e.g. emotion words are displayed slightly higher on the screen). In the testing phase, participants view 120
additional words without accompanying categories, and are asked to identify to which of four categories the provided word belongs. The nonsalient covariation was between the category and location of the word on the screen. Results support improved accuracy in identifying the category of testing words with the covariation. The improvement in accuracy increases over time supporting the hypothesis of self-perpetuation of encoding rules. Regarding follow-up discussions with participants, according to Lewicki et al., “Not a single subject mentioned anything even remotely relevant to the true nature of the manipulated covariation” (1989, p. 332).

Matrix-scanning procedure (Lewicki 1986; Lewicki et al. 1989; Hill et al. 1989). Participants view matrices, which contain a target digit within a specific quadrant in each matrix. Participants are allowed a very brief moment (100 milliseconds) to view a matrix attempt to identify which quadrant the target digit is in. Each participant views a sequence of 450 matrices across two phases: 90 of the matrices in the learning phase and 360 matrices in the testing phase. Participants are assigned to either an experimental (covariation exists between location of digit and matrix) or control group (no covariation exists). Results from the testing phase show that participants in the experimental condition respond following the covariation embedded in the matrices during the learning phase. However, in follow-up discussions, participants are unable to explain the covariation.
APPENDIX B

PRACTITIONER INTERVIEWS INSTRUMENT
Dear Auditor,

I am a Ph.D. student at the University of North Texas, and am asking for your help with completing my dissertation by participating in the following research interview. Some demographic questions will be asked, but no identifying information will be collected. Your responses will be kept confidential and reported anonymously. Attached is a copy of the UNT IRB form for your review.

If you have questions, want a summary of results, or would like to make additional comments, please contact:

Jeremy Vinson, CPA  
Ph.D. Student  
The University of North Texas  
Department of Accounting  
1155 Union Circle #305219  
Denton, TX 76203  
Jeremy.Vinson@unt.edu

Thank you for your participation, which is crucial to the success of this project.
University of North Texas Institutional Review Board
Informed Consent Notice

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:** Understanding Auditors’ Performance of Client Inquiry in Practice

**Student Investigator:** Jeremy Vinson, CPA, University of North Texas (UNT) Department of Accounting. **Supervising Investigator:** Jesse Robertson, Ph.D., CPA.

**Purpose of the Study:** You are being asked to participate in a research study, which involves interviewing experienced audit professionals about auditor performance of a common and important audit task, client inquiry. Specifically, I seek to gain an understanding of auditor training, preparation, performance, and documentation of client inquiries. This research study will benefit my dissertation and academic research by providing evidence regarding auditor performance of client inquiry, information currently lacking in the accounting literature.

**Study Procedures:** You will be asked to participate in an interview that will take about one hour of your time. The interview will consist of a series of questions about client inquiries.

**Foreseeable Risks:** No foreseeable risks are involved in this study.

**Benefits to the Subjects or Others:** This study is not expected to be of any direct benefit to you, but we hope to learn more about auditor performance of client inquiries. This may benefit others by informing academic researchers of what happens in audit practice, and informing auditors of potential best practices or suggestions for improvement regarding client inquiries.

**Compensation for Participants:** None.

**Procedures for Maintaining Confidentiality of Research Records:** First, no personally identifiable information will be asked during the interview. Second, I will ensure confidentiality of your responses by assigning a letter to your responses instead of your name, and by maintaining a key separate from the data. The confidentiality of your individual information will be maintained in any publications or presentations regarding this study. Any quotes will be reported anonymously.

**Questions about the Study:** If you have any questions about the study, you may contact Jeremy Vinson at Jeremy.Vinson@unt.edu or Jesse Robertson at Jesse.Robertson@unt.edu.

**Review for the Protection of Participants:** This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.
Research Participants’ Rights:

Your participation in the survey confirms that you have read all of the above and that you agree to all of the following:

- Jeremy Vinson has explained the study to you and you have had an opportunity to contact him/her with any questions about the study. You have been informed of the possible benefits and the potential risks of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You understand you may print a copy of this form for your records.
For the purposes of this survey, the term or any variant of the term “client inquiry” is defined following the PCAOB, AS 15, as “[Informal oral inquiries that] consist of seeking information from knowledgeable persons in financial or nonfinancial roles within the company”.

Questions:

Training and Preparation
1. Does your firm provide specific training on performing client inquiries? If so, how often (when hired, annually, only for staff-level auditors, etc.)?
2. What type of training is provided (e.g. in-person, on-the-job, simulations)?
3. How do you suggest an auditor should prepare for a client inquiry?
4. In preparing for a client inquiry, do your auditors utilize standardized questionnaires, tailor standardized questionnaires, or develop their own questions?
5. Does your firm require, or suggest, staff-level or senior auditors to have his or her questions approved by a higher-level auditor prior to an inquiry?

Conducting a Client Inquiry
6. What levels of auditors perform client inquiries?
7. Are inquiries performed solo or in pairs?
8. Do staff-level auditors inquire with upper-level personnel such as controllers and CFO's?
9. Do senior auditors inquire with upper-level personnel such as controllers and CFO's?
10. Does your firm require auditors to take notes during inquiries? If not required, is it suggested?
11. Do you expect taking notes during a client inquiry improves the quality of evidence auditors gather and document?
12. List the top three difficulties staff-level and senior auditors encounter conducting client inquiries:
   a. ____________________
   b. ____________________
   c. ____________________
13. Has a client provided you evidence during an inquiry that you realized was inconsistent with prior evidence obtained? Can you provide an example?
14. Did you realize the inconsistency during or after the inquiry?
15. Does reviewing your notes help you to identify inconsistencies?

Documentation, Review, and Follow-up
16. What are your firm's practices to help ensure accurate evidence is acquired and documented from client inquiries?
17. How reliable does your firm consider evidence obtained from client inquiries to be?
18. Does your firm require corroboration of evidence obtained from client inquiries? If so, how does your firm determine whether sufficient corroborating evidence was obtained?
19. How does evidence obtained from client inquiries affect later audit procedures?
20. Do auditors utilize notes taken during a client inquiry to assist with work paper documentation?
21. Are notes taken during a client inquiry, or a typed summary memorandum of the inquiry, maintained as documentation?
Demographics:
1. What size of accounting firm do you work for?
2. What is your current level/rank?
3. How many years of financial statement auditing experience do you have in public accounting (use fractions if needed)?
4. Are you a licensed CPA?
5. How many times have you conducted a face-to-face client inquiry?
6. Do you prefer to take notes during a client inquiry? If so, how (paper, laptop, etc.)?
7. How many times have you reviewed evidence gathered from a client inquiry by a lower-level auditor?

Directions: Below is a list of common client inquiries performed during audit engagements. Next to each inquiry, list the level of auditor likely to complete the type of inquiry (e.g. staff, senior, manager, etc.) and level of client employee likely to be inquired with (e.g. controller, CFO, etc.).

<table>
<thead>
<tr>
<th>Inquiry Type</th>
<th>Auditor Level/Rank</th>
<th>Client Employee Level/Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Fraud inquiry (SAS 99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Account activity inquiry during substantive procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Risk assessment planning inquiry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Internal control walkthrough with client personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Planning analytical procedures follow-up inquiry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Substantive analytical procedures follow-up inquiry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Final review analytical procedures follow-up inquiry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Directions: Please order the above types of client inquiries under each category below. Use all client inquiry types in each category.

<table>
<thead>
<tr>
<th>Importance to the audit</th>
<th>General difficulty to perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
</tr>
</tbody>
</table>
APPENDIX C

EXPERIMENTAL INSTRUMENT
Dear Participant:

I am a PhD student at the University of North Texas, and am asking for your help with completing my dissertation by participating in the following research study. Please carefully read the information provided and attempt to place yourself in the situation described so that you can answer the questions as if it were an actual audit. Some demographic questions will be asked, but no identifying information will be collected. Your responses will be anonymous, kept confidential, and analyzed only in aggregate along with other auditors. Do not record your name or your firm’s name on this study.

I have provided as much relevant information as possible without making the case too long. The case should take about 30 minutes to complete and should be completed in one sitting. Please work this case individually and answer the questions in the order presented. The study includes video, so please check that the sound on your computer is functioning properly. If you have questions, want a summary of results, or would like to make additional comments, please contact:

Jeremy Vinson, CPA  
Ph.D. Student  
The University of North Texas  
Department of Accounting  
1155 Union Circle #305219  
Denton, TX 76203  
Jeremy.Vinson@unt.edu

Thank you for your participation, which is crucial to the success of this project.
University of North Texas Institutional Review Board
Informed Consent Notice

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: Auditor Evidence Gathering from a Client Inquiry

Student Investigator: Jeremy Vinson, University of North Texas (UNT) Department of Accounting. Supervising Investigator: Mary Curtis, Ph.D., UNT Department of Accounting.

Purpose of the Study: You are being asked to participate in a research study which involves accountants performing a financial statement audit task. The purpose of the study is to examine differences between auditors in evidence gathered and judgments made resulting from a hypothetical client inquiry (an approximately 3.5-minute video recording). Additionally, the study will examine the role of note taking in the inquiry process.

Study Procedures: You will be asked to make audit-related judgments and decisions after reading information and observing a client inquiry for a hypothetical audit client. Please approach the case as you would an actual audit. This study should take approximately 30 minutes of your time.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This project is not expected to benefit you directly beyond giving you some audit-related case experience. It may contribute to practice, society, and existing research by improving our understanding of auditors’ judgments and decisions.

Compensation for Participants: None.

Procedures for Maintaining Confidentiality of Research Records: No personally identifiable data are collected. Do not provide your name. General demographic information will be asked, such as your age, gender, and experience. Your responses will not be able to be linked to you or any other individual, and only aggregated survey data will be reported. Your responses will be numerically coded and entered into a statistics software. Only combined data from all participants will be published in academic journals or other forums.

Questions about the Study: If you have any questions about the study, you may contact Bette Kozlowski at bkozlowski@kpmg.com.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants’ Rights:
Your participation in the survey confirms that you have read all of the above and that you agree to all of the following:

• Jeremy Vinson has explained the study to you and you have had an opportunity to contact Bette Kozlowski with any questions about the study. You have been informed of the possible benefits and the potential risks of the study.
• You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
• You understand why the study is being conducted and how it will be performed.
• You understand your rights as a research participant and you voluntarily consent to participate in this study.
• You understand you may keep this form for your records.
Assume you are a *senior auditor* for your firm. You are on an engagement team auditing Sailing Ale Brewery, Inc. (“SAB”), a large craft beer brewery based in San Diego, CA. SAB is a public company and has been an audit client of your firm for more than five years, receiving unqualified opinions for financial statements and internal controls each year. SAB has a year end of December 31.

SAB earns revenue by producing and selling products, including over fifty brands of beer, to a network of 345 distributors. The distributors then sell the products to retailers such as restaurants, grocery stores, convenience stores, stadiums, and other outlets. SAB competes nationally against large domestic brewers, foreign brewers, and a growing number of craft brewers for both shelf space and consumer attention. Following the industry standard, SAB records revenue and accounts receivable when product is shipped to a distributor, F.O.B. shipping point.

During planning, inherent risk and control risk for accounts receivable were assessed as moderate and low, respectively. Thus, the audit plan calls for a reliance strategy regarding accounts receivable. Interim tests of controls found no control deficiencies or weaknesses for the accounts receivable assertions of accuracy and valuation. As such, the assessed control risk was supported. Inherent risk was assessed as moderate due to no misstatements in accounts receivable in prior years, but an increase in accounts receivable observed during planning. *Materiality for accounts receivable is $2.5 million*, calculated as seventy percent of planning materiality (five percent of net income).

The engagement team is now conducting substantive procedures after year end. The audit plan for accounts receivable first calls for an inquiry with client personnel regarding account activity and shipments near year end. SAB’s controller, John Parker, oversees accounts receivable. According to your audit manager, John has been the controller at SAB for several years, and was an auditor prior to accepting the controller position. Your manager believes John is honest, and competent about accounting and the industry.

Your task is to inquire of John Parker regarding *accounts receivable account activity and year end shipments*. Following the inquiry, you will be asked to document your understanding.
The following 2013 and 2012 comparative financial statements for SAB are available for your review before the inquiry:

### SAILING ALE BREWERY, INC.
#### BALANCE SHEETS
#### AS OF DECEMBER 31, 2013 AND 2012
#### (In thousands)

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>(Unaudited)</th>
<th></th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
<td>2012</td>
<td></td>
</tr>
<tr>
<td><strong>ASSETS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Assets:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>$49,524</td>
<td>$74,463</td>
<td>-33%</td>
</tr>
<tr>
<td>Accounts receivable, net of allowance for doubtful accounts of $620 and $125 as of December 31, 2013 and 2012, respectively</td>
<td>42,001</td>
<td>31,479</td>
<td>33%</td>
</tr>
<tr>
<td>Inventories</td>
<td>72,753</td>
<td>56,400</td>
<td>29%</td>
</tr>
<tr>
<td>Total current assets</td>
<td>164,278</td>
<td>162,342</td>
<td>1%</td>
</tr>
<tr>
<td>Property, plant and equipment, net</td>
<td>279,797</td>
<td>197,142</td>
<td>42%</td>
</tr>
<tr>
<td>Total assets</td>
<td>$444,075</td>
<td>$359,484</td>
<td>24%</td>
</tr>
<tr>
<td><strong>LIABILITIES AND STOCKHOLDERS’ EQUITY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>$141,990</td>
<td>$114,393</td>
<td>24%</td>
</tr>
<tr>
<td>Stockholders’ Equity</td>
<td>302,085</td>
<td>245,091</td>
<td>23%</td>
</tr>
<tr>
<td>Total liabilities and stockholders’ equity</td>
<td>$444,075</td>
<td>$359,484</td>
<td>24%</td>
</tr>
</tbody>
</table>

### SAILING ALE BREWERY, INC.
#### STATEMENTS OF INCOME
#### YEARS ENDED DECEMBER 31, 2013 AND 2012
#### (In thousands)

<table>
<thead>
<tr>
<th></th>
<th>(Unaudited)</th>
<th></th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
<td>2012</td>
<td></td>
</tr>
<tr>
<td><strong>Net revenue</strong></td>
<td>$739,053</td>
<td>$580,222</td>
<td>27%</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>354,131</td>
<td>265,012</td>
<td>34%</td>
</tr>
<tr>
<td>Gross profit</td>
<td>384,922</td>
<td>315,210</td>
<td>22%</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>314,064</td>
<td>255,788</td>
<td>23%</td>
</tr>
<tr>
<td>Net income</td>
<td>$70,858</td>
<td>$59,422</td>
<td>19%</td>
</tr>
</tbody>
</table>
SAILING ALE BREWERY, INC.
ACCOUNTS RECEIVABLE AGING SUMMARY
AT DECEMBER 31, 2013 (unaudited)
(In thousands)

<table>
<thead>
<tr>
<th>Days</th>
<th>Balance</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7</td>
<td>$27,291,000</td>
<td>64.0%</td>
</tr>
<tr>
<td>8-14</td>
<td>2,349,000</td>
<td>5.5%</td>
</tr>
<tr>
<td>15-21</td>
<td>1,619,000</td>
<td>3.8%</td>
</tr>
<tr>
<td>22-28</td>
<td>873,000</td>
<td>2.0%</td>
</tr>
<tr>
<td>&gt;29</td>
<td>10,489,000</td>
<td>24.7%</td>
</tr>
</tbody>
</table>

Accounts Receivable | 42,621,000  | 100.0% |
Allowance for doubtful accounts | (620,000)   |     |
Net Accounts Receivable | $42,001,000 |       |

* Accounts receivable collections in this industry are such that aging schedules do not follow the typical 30-day increments.

Statistical Data:

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2012</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrels sold (in thousands)*</td>
<td>3,517</td>
<td>2,746</td>
<td>28%</td>
</tr>
<tr>
<td>Net revenue per barrel (rounded)</td>
<td>$210</td>
<td>$211</td>
<td>0%</td>
</tr>
</tbody>
</table>

* Barrel is a metric used by breweries to measure quantity. A barrel is 31 gallons.

<table>
<thead>
<tr>
<th>Accounts Receivable Turnover</th>
<th>Days Sales Outstanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>20.1</td>
</tr>
<tr>
<td>2012</td>
<td>25.2</td>
</tr>
</tbody>
</table>

After reviewing the above documentation, you are to inquire with SAB’s controller, John Parker. The next page includes a video of John’s response to your inquiry regarding the accounts receivable activity and year end shipments.
NARRATIVE
Changes in our accounts receivable are mostly related to revenue growth. We had a fantastic year. We grew sales by almost thirty percent and we sold more barrels of beer this year than ever before. While the domestic beer industry was down approximately one percent, the craft beer industry grew approximately fifteen percent. We attribute our sales growth to continued consumer loyalty with our core products, as well as a continuous rollout of new products to attract consumer attention. We also acquired a small craft brewery in the Midwest. This purchase helped us gain access to a new market, as well as create new relationships with distributors in that area.

Our accounts receivable balance increased over last year mostly because our distributors are purchasing more of our products to keep up with consumer demand. Our Fresh Beer Program, which has been in place for a few years, works extensively to forecast product demand so that we do not produce or ship excess inventory. We do not want old beer on the shelves. The result of this program though, is that it compresses the ordering, shipping, and billing period. As such, we usually collect our receivables within a month, and our real focus is keeping our days-sales-outstanding at less than fifteen days. This year, the industry saw an increase in the costs of raw materials and production. This caused us, and many others, to raise prices. Another result of these cost increases is that our distributors’ cash flows were affected. Our distributors have paid their receivable balances at a slightly slower pace compared to the prior year. This has caused some inflation in our accounts receivable balance. The distributors we gained in the Midwest, they’re still adjusting to our accelerated billing and collection policies. We decided to slightly increase our allowance for doubtful accounts this year to accommodate the larger accounts receivable balances, as well as our new distributor relationships. We still are maintaining an allowance of less than one percent of gross accounts receivable, though.

The end of the year is usually good for us, you know, because of the holidays, particularly New Year’s Eve. We push out a lot of product in December to meet demand. To avoid overwhelming our distributors though, we try to spread our shipments out over the final two weeks of December; shipments generally taper off the last few days of the year. Usually results in an increase in receivables for the final two weeks of the year.

Lastly, I guess, in early 2014, we began a national rollout of a new beer, Trade Winds IPA. We had success with this product in test markets during 2013. In order to capture consumer attention, as well as increase January sales, we ramped up production and shipped this product nationally beginning January 1. You will probably see a big jump in receivables during the subsequent period. But, we expect Trade Winds IPA to help us have a great start to 2014. The early indications are that consumers love it.
Notes:
<insert box>

NEXT PAGE

<ALL CONDITIONS>

Please enter your follow up question for John Parker, SAB’s controller:

<insert box>

NEXT PAGE
DIRECTIONS. Please respond to the following items based on how you generally feel, using the six-point scale below. The items do not relate to the client inquiry.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I do not have very vivid dreams.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. In general, I like to keep control over my thoughts rather than let them wander.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. I often do double-takes; I check again to see if I really saw what I thought I saw.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. I do not believe in mental telepathy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. Sometimes I hear a rhythm in repetitive noises like dripping water from a faucet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. I am easily distracted.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. I often have déjà vu; the feeling that I've been in the same situation before even though I can't quite remember it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

DIRECTIONS. Please respond to the following items using this six-point scale:

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Sometimes when I'm driving, I see a piece of paper or a leaf being moved by the wind, and for a split second think it might be an animal (e.g., a squirrel or a cat).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. I never or rarely finish others' sentences when they're speaking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10. My imagination gives me satisfaction even when things in my life aren't going that well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11. When I'm on a walk, I sometimes see a rock or piece of wood and for a split second mistake it for something else (or have a similar experience in other conditions).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12. I make quick impressions of people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>13. Sometimes I feel my dreams are prophetic and foretell future events.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>14. I very rarely rely on my intuition in coming to conclusions or making decisions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

DIRECTIONS. Please respond to the following items using this six-point scale:

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Sometimes when I try to call someone I think for a split second I hear their voice before realizing that someone else actually answered.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>16. I often get so wrapped up in a stream of thought or what I'm reading that I become more or less oblivious to my surroundings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>17. I rarely feel my dreams would make a great story.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>18. For a split second from a distance, I sometimes mistake strangers for people I know.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>19. I sometimes feel my dreams contain breakthroughs or insights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>20. If I get depressed, it's only because something obvious in my life has gone wrong.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>21. I've sometimes noticed a particular object to my left or right, and only after I turned my head I realized it was something else.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<This questionnaire was obtained from: http://www.mwbp.org/research/lewicki/iestyles.html>
<PARTICIPANTS IN THE NOTE TAKING WITH REVIEW CONDITION WILL SEE THE FOLLOWING SENTENCE AND WILL BE SHOWN HIS OR HER NOTES THAT WERE TYPED DURING THE VIDEO >

DIRECTIONS. Please take a moment to review your notes taken during the client inquiry.

< THE OTHER TWO CONDITIONS WILL NOT RECEIVE THIS PAGE>

DIRECTIONS. In the space below, please type all of the information you remember from the client inquiry.

<insert box>

NEXT PAGE
DIRECTIONS. Indicate each item below as having been (1) explicitly stated in, (2) a "valid summary" of, or (3) "new, not a valid summary" of evidence discussed in the inquiry.

1. Our sales growth outpaced both the domestic beer industry and craft beer segment. Explicitly stated in

2. Consumers are happy with our new Trade Winds IPA product according to 2013 test markets. Valid summary of

3. Our fresh beer program forecasts product demand to reduce excess inventory resulting in a five percent reduction in product expiration this year. New, not a valid summary

4. We decided to slightly increase our allowance for doubtful accounts this year to accommodate the larger accounts receivable balances, as well as our new distributor relationships. New, not a valid summary

5. We are incentivizing the new Midwest distributors with sales credits to speed up collections. New, not a valid summary

6. Although accounts receivable and the allowance for doubtful accounts have increased, we have a very good ratio of accounts receivable to allowance for doubtful accounts. New, not a valid summary

7. Our distributors have paid their receivable balances at a slightly slower pace compared to the prior year. This has caused some inflation in our accounts receivable balance. New, not a valid summary

8. A competitor is rolling out a new product January 1, 2014, to compete with Trade Winds IPA. New, not a valid summary

9. Per barrel prices increased due to our acquired Midwest brands selling at a higher price. New, not a valid summary

10. We attribute our sales growth to continued consumer loyalty with our core products, as well as a continuous rollout of new products to attract consumer attention. New, not a valid summary

11. To avoid overwhelming our distributors, though, we try to spread our shipments out over the final two weeks of December. New, not a valid summary

12. Sales and accounts receivable have increased roughly thirty percent over the prior year due to consumer demand and acquisitions. New, not a valid summary
How confident are you in the accuracy of your memory of the inquiry with the controller?

<table>
<thead>
<tr>
<th>Not at all Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>
Please answer the following questions considering your inquiry with SAB’s controller, John Parker:

1. Please estimate the probability that accounts receivable is materially misstated:

<table>
<thead>
<tr>
<th>No Possible Chance</th>
<th>Absolute Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

2. How reasonable is John Parker’s explanation for the accounts receivable activity?

<table>
<thead>
<tr>
<th>Not at all Reasonable</th>
<th>Very Reasonable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

3. How likely would you be to suggest increasing substantive testing for the accounts receivable account?

<table>
<thead>
<tr>
<th>Not at all Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

4. Which of the following substantive procedures would you recommend to support SAB accounts receivable assertions of existence and cutoff? (select all that apply, your current remaining budget is 30 hours)
   a. Further inquiry with John Parker, SAB’s Controller, including preparing for and documenting the inquiry. (1 hour)
   b. Inquiry with SAB’s CFO, including preparing for and documenting the inquiry. (2 hours)
   c. Subsequent receipts testing through January 7, 2014. (8 hours)
   d. Subsequent receipts testing through January 14, 2014. (16 hours)
   e. Inspection of documents for the receivables shipped on December 31, 2013, and January 1, 2014. (8 hours)
   f. Inspection of documents for the receivables shipped between December 26, 2013, and January 6, 2014. (16 hours)
   g. Confirmation of accounts receivable balances greater than tolerable misstatement. (5 hours)
   h. Confirmation of accounts receivable balances including select balances less than tolerable misstatement. (10 hours)
   i. Ask the audit engagement partner for more hours in the budget (1 hour).
   j. No further substantive testing.

5. What is your assessment of the financial condition of the client, SAB?

<table>
<thead>
<tr>
<th>Weak Financial Condition</th>
<th>Strong Financial Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

6. If you noticed any inconsistencies between statements made during the client inquiry and the financial information presented, please list them below:

<insert box>
ABOUT THE CASE
Please answer the following questions regarding the case.

This case was…

<table>
<thead>
<tr>
<th>Not at all realistic</th>
<th>Very realistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

This case was…

<table>
<thead>
<tr>
<th>Not at all interesting</th>
<th>Very interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

This case was…

<table>
<thead>
<tr>
<th>Not at all understandable</th>
<th>Very understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

In general, the usefulness of inquiries in understanding fluctuations in account balances is:

<table>
<thead>
<tr>
<th>Not at all useful</th>
<th>Very useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
ABOUT YOU
These questions are for classification purposes only. No attempts will be made to identify you.

1. What size of accounting firm do you work for?
   a. Big 4
   b. International, non-Big 4
   c. National
   d. Regional
   e. Local

2. What is your current level?
   a. Associate
   b. Senior/in-charge
   c. Manager
   d. Senior Manager
   e. Partner
   f. Other: _______________

3. How many years of financial statement auditing experience do you have in public accounting?
   a. <1
   b. 1-2
   c. 2-3
   d. 3-4
   e. 4-5
   f. >5

4. Are you a licensed CPA?  _____Yes  _____No

5. Have you ever audited accounts receivable?  _____Yes  _____No
   How many times? ______

6. Have you ever conducted face-to-face client inquiries?  _____Yes  _____No
   How many times? ______
   a. If so, do you usually take notes?  _____Yes  _____No
   b. What is the highest level of client employee you have conducted a face-to-face inquiry with? _______________

7. Have you conducted a face-to-face client inquiry with personnel at controller level or above?  _____Yes  _____No
   a. How many times? ______

8. How do you prefer to take notes during client inquiries?
   a. Hand-written
   b. Typed (including electronic tablets and other devices)
   c. A combination of hand-written and typed
   d. I do not usually take notes
9. Gender: _____ Male _____ Female

10. Age in years:
   a. 18-22
   b. 23-25
   c. 26-28
   d. 29-30
   e. >30

11. What is the highest level of education you have completed?
   a. Bachelor’s
   b. Master’s
   c. Ph.D.
   d. Other: _____________

12. Number of years since you completed a college class:
   a. <1
   b. 1-2
   c. 2-3
   d. 3-4
   e. 4-5
   f. >5

Please respond to the following statements about yourself:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. I take detailed notes.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>14. I take notes that are clear in meaning.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>15. I take notes in outline form.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>16. I can type quickly.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>17. I can type accurately.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>18. I am comfortable typing during a conversation.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>19. I can type notes and listen at the same time.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>20. I am not distracted from listening by trying to type notes.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

THANK YOU VERY MUCH FOR COMPLETING THE STUDY!
If you have additional thoughts about the case, please write them here:

<Insert box>
APPENDIX D

LIST OF INCONSISTENCIES
<table>
<thead>
<tr>
<th>Financial Background item</th>
<th>Contradicting Narrative Statement</th>
<th>Issue/Assertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR Aging schedule balances show 64 percent aged 1-7 days compared to only 5.5 percent aged 8-14 days.</td>
<td>&quot;To avoid overwhelming our distributors though, we try to spread our shipments out over the final two weeks of December; shipments generally taper off the last few days of the year. Usually results in an increase in receivables for the final two weeks of the year&quot;</td>
<td>Cutoff</td>
</tr>
<tr>
<td>AR Aging schedule balances show 24.7 percent aged &gt;29 days.</td>
<td>&quot;As such, we usually collect our receivables within a month.&quot;</td>
<td>Collection</td>
</tr>
<tr>
<td>Statistical data show net revenue per barrel has decreased $1.00 per barrel.</td>
<td>&quot;This year, the industry saw an increase in the costs of raw materials and production. This caused us, and many others, to raise prices.&quot;</td>
<td>Valuation</td>
</tr>
<tr>
<td>Allowance for doubtful accounts is 1.5% of gross AR</td>
<td>“We still are maintaining an allowance of less than one percent of gross accounts receivable, though.”</td>
<td>Valuation</td>
</tr>
<tr>
<td>Statistical data show days-sales-outstanding increased from 14.5 to 18.1.</td>
<td>&quot;Our real focus is keeping our days-sales-outstanding at less than fifteen days.&quot;</td>
<td>Collection</td>
</tr>
</tbody>
</table>
APPENDIX E

LIST OF IDEAS COMMUNICATED DURING INQUIRY
To create the list below, I separated sentences within the client inquiry narrative so that each separate idea communicated is listed. Explicit sentences communicating one idea are listed below. If a single sentence communicated multiple ideas, the ideas were separated and bracketed words were added. This list will be used as a key to scoring participants’ free recall responses.

1. Changes in our accounts receivable are mostly related to our revenue growth.
2. We had a fantastic year.
3. We grew sales by almost thirty percent.
4. We sold more barrels of beer this year than ever before.
5. The domestic beer industry was down approximately one percent.
6. The craft beer industry grew approximately fifteen percent.
7. We attribute our sales growth to continued consumer loyalty with our core products.
8. [We attribute our sales growth to] a continuous rollout of new products to attract consumer attention.
9. We also acquired a small craft brewery in the Midwest.
10. This purchase helped us gain access to a new market.
11. [This purchase helped us] create new relationships with distributors in that area [the Midwest or new market].
12. Our accounts receivable balance increased over last year mostly because our distributors are purchasing more of our products to keep up with consumer demand.
13. Our Fresh Beer Program has been in place for a few years.
15. [Our Fresh Beer Program or By forecasting product demand] so that we do not produce or ship excess inventory.
16. We do not want old beer on the shelves.
17. [Our Fresh Beer Program] compresses the ordering [period].
18. [Our Fresh Beer Program compresses the] shipping [period].
20. We usually collect our receivables within a month.
21. Our real focus is keeping our days-sales-outstanding at less than fifteen days.
22. This year, the industry saw an increase in the costs of raw materials.
23. [This year, the industry saw an increase in the costs of] production.
24. This caused us, and many others, to raise prices.
25. Another result of these cost increases is that our distributors’ cash flows were affected.
26. Our distributors have paid their receivable balances at a slightly slower pace compared to the prior year.
27. [Distributors paying slower] has caused some inflation in our accounts receivable balance.
28. The distributors we gained in the Midwest, they’re still adjusting to our accelerated billing policy.
29. [The distributors we gained in the Midwest, they’re still adjusting to our accelerated] collections policy.
30. We decided to slightly increase our allowance for doubtful accounts this year.
31. [We decided to slightly increase our allowance for doubtful accounts this year] to accommodate the larger accounts receivable balances.
32. [We decided to slightly increase our allowance for doubtful accounts this year to accommodate] new distributor relationships.
33. We still are maintaining have an allowance of less than one percent of gross accounts receivable, though.
34. The end of the year is usually good for us because of the holidays.
35. [The end of the year is usually good for us because of the holidays] particularly New Years Eve.
36. We push out a lot of product in December to meet demand.
37. To avoid overwhelming our distributors, though, we try to spread our shipments out over the final two weeks of December.
38. Shipments generally taper off the last few days of the year.
39. [Meeting holiday demand] usually results in an increase in receivables for the final two weeks of the year.
40. In early 2014, we began a national rollout of a new beer, Trade Winds IPA.
41. We had success with [Trade Winds IPA] in test markets during 2013.
42. In order to capture consumer attention we ramped up production and shipped [Trade Winds IPA] nationally beginning January 1.
43. [In order to] increase January sales, [we ramped up production and shipped Trade Winds IPA nationally beginning January 1].
44. You will probably see a big jump in receivables during the subsequent period.
45. We expect Trade Winds IPA to help us have a great start to 2014.
46. Early indications are that consumers love [Trade Winds IPA].
APPENDIX F

CODER INSTRUCTIONS
Thank you for your willingness to help with my dissertation. I am asking for you to code participants’ responses by comparing responses to a predetermined list of items, judging the responses for accuracy.

Included in this packet are the original script, a coding key, scoring sheet, two pens, a highlighter, and copies of participants’ responses. Each page represents a participant’s response and is identified by a three-digit number in the upper right-hand corner of the page. These numbers coincide with participant numbers on the scoring sheet. Participants’ responses are expected to vary in length, detail, and readability.

Instructions

Step one: read the original script to familiarize yourself with the overall information communicated to the participants.

Step two: select a participant’s response and read through it. While reading, use the blue pen to underline each idea communicated by the participant. Only unique ideas should be counted, so if a participant has two responses communicating the same idea, only one instance should be underlined. See Example 1 below. Count the total ideas communicated and write the number on the scoring sheet under the ideas communicated column next to the related participant number.

Step three: compare each of the ideas communicated by the participant (underlined in blue) to the coding key provided. You are to look for accuracy of the idea, not how well developed or well written an idea is. Use gist scoring: with this criterion, a participant’s writing of a given idea does not need to be verbatim to the key; rather, it is sufficient that the meaning is equivalent to that of the coding key. If a participant’s response either communicates explicitly or the gist of an idea presented in the coding key, the response should be scored as accurate.
Highlight each accurate idea communicated with the highlighter. Count the total accurate ideas communicated and write the number on the scoring sheet under the accurate ideas communicated column next to the related participant number.

Step four: examine the responses that you did not highlight (i.e. inaccurate responses), and determine whether any of the responses are an inference or elaboration of ideas in the original script. See Example 2 below. Underline any inferences or elaborations with the red pen. Count the total inferences/elaborations and write the number on the scoring sheet under the elaboration ideas communicated column next to the related participant number.

When you have completed all participants, please place all materials back in the packet and return the packet to me.

Thank you again for your help!

Example 1: The sentence “We attribute our sales growth to continued consumer loyalty with our core products, as well as a continuous rollout of new products to attract consumer attention” should be considered as communicating two separate ideas. First, we attribute our sales growth to continued consumer loyalty with our core products. Second, [we attribute our sales growth to] a continuous rollout of new products to attract consumer attention. Thus, two ideas originate from one sentence. This is how the coding key was developed from the original script.

Example 2: The client stated, “We do not want old beer on the shelves.” If a participant answers, “We do not want old beer on the shelves since beer has a limited shelf life,” this would be considered an elaboration of the idea. The participant is adding to the client’s statement with new ideas.
APPENDIX G

RECOGNITION TASK KEY
Below is the recognition task participants will complete during the study. The correct answer for each item is in bold text. This key will be used to score participants’ performance on the recognition task.

Indicate each test item as having been (1) explicitly stated in, (2) a "valid summary" of, or (3) "new, not a valid summary" of evidence discussed in the inquiry.

1. Our sales growth outpaced both the domestic beer industry and craft beer segment.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

2. Consumers are happy with our new Trade Winds IPA product according to 2013 test markets.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

3. Our fresh beer program forecasts product demand to reduce excess inventory resulting in a five percent reduction in product expiration this year.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

4. We decided to slightly increase our allowance for doubtful accounts this year to accommodate the larger accounts receivable balances, as well as our new distributor relationships.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

5. We are incentivizing the new Midwest distributors with sales credits to speed up collections.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

6. Although accounts receivable and the allowance for doubtful accounts have increased, we have a very good ratio of accounts receivable to allowance for doubtful accounts.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

7. Our distributors have paid their receivable balances at a slightly slower pace compared to the prior year. This has caused some inflation in our accounts receivable balance.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

8. A competitor is rolling out a new product January 1, 2014, to compete with Trade Winds IPA.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

9. Per barrel prices increased due to our acquired Midwest brands selling at a higher price.
   - Explicitly stated in
   - Valid summary of
   - New, not a valid summary

10. We attribute our sales growth to continued consumer loyalty with our core products, as well as a continuous rollout of new products to attract consumer attention.
    - Explicitly stated in
    - Valid summary of
    - New, not a valid summary

11. To avoid overwhelming our distributors, though, we try to spread our shipments out over the final two weeks of December.
    - Explicitly stated in
    - Valid summary of
    - New, not a valid summary

12. Sales and accounts receivable have increased roughly thirty percent over the prior year due to consumer demand and acquisitions.
    - Explicitly stated in
    - Valid summary of
    - New, not a valid summary
REFERENCES


Gill, T. 2000. *Individual differences in the schema activation, as measured by the revised nisroe (the encoding style questionnaire).* Unpublished doctoral dissertation, University of Tulsa.


