Do Social Biases Impede Auditor Reliance on Specialists?

Toward a Theory of Social Similarity

by

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DEDICATION

I would like to dedicate my dissertation to my father, Avi Limor. My father was a great and accomplished man that inspired me to be the best that I can be. Since his passing, every goal I have achieved has been in his honor.

I would also like to thank my mother, grandmother, and siblings for their support: Line Limor, Pierrette Girard, Karine Limor, and Elan Limor. My hope is to be able to make up the time I was unable to spend with them throughout the course of my doctoral program.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Does social similarity between the auditor and a specialist induce social biases that impair the auditor's reliance on the specialist? It is important to examine potential impairments to reliance since auditors do not possess expertise in many of the areas examined during the audit. One type of specialist that is increasingly relied upon by the auditor is the IT specialist.

Since firms have two approaches to the organization of IT personnel (decentralized vs. centralized) and often use professional designations as a hiring criteria for specialists, I examine two dimensions of social similarity: domain knowledge distinctiveness and spatial distance. Using a 2×2 experiment manipulating the IT specialist's domain knowledge distinctiveness (distinct vs. overlapping) and spatial distance (in-house office location vs. outsourcing from another office) relative to the auditor, I investigate financial auditors' reliance on IT specialists.

My findings provide evidence of a boundary condition to the widely accepted social identity theory. Specifically, when specialists (IT specialists in this study) are outsourced, marginally less reliance is placed on specialists possessing overlapping (shared) domain knowledge relative to distinct domain knowledge. Additionally, I find evidence of a "consultant effect" in which greater auditor reliance is placed on IT specialists from other offices when the IT specialist possesses distinct domain knowledge relative to the financial auditor. Findings suggest that a broader theory of social similarity in which dimensions of social similarity can interact to produce social biases appears to be more descriptive of real-world social complexities than social identity theory.

1. INTRODUCTION

Over the last several decades the complexity of business environments has proliferated to such levels that standard setters have presumptively mandated the auditor to consider the use of specialists when conducting an audit of financial statements. Statement on Auditing Standard (SAS) No. 73, *Using the Work of a Specialist*, and AU-C 620, *Using the Work of an Auditor's Specialist* provide examples of areas in which the auditor may need to seek assistance from a specialist when conducting the audit of public entities and non-public entities, respectively (AICPA 2012; AICPA 1994). For example, auditors may seek a specialist possessing expertise relating to areas such as the valuation of complex financial instruments, the actuarial calculation of liabilities associated with insurance contracts or employee benefit plans, or the estimation of oil and other mineral reserves.

One situation encountered by auditors with increasing frequency is client use of complex information systems. The widespread implementation of enterprise resource planning (ERP) systems, for example, by small, medium, and large companies prompted standard setters to presumptively require auditors to consider assigning information technology (IT) specialists to audit engagements in order to determine the effect of IT on the audit, gain an understanding of IT controls, and design and perform tests of IT controls (AICPA 2012; 2006a; 2006b; 2006c). The escalating importance of the role of IT in the integrated audit of financial statements and internal controls over financial reporting for publicly traded companies has increased the value of IT specialists to audit firms.

Given the current pervasiveness of IT throughout organizations and standards' increased emphasis on internal controls over financial reporting, it is important to assess the implications of how an audit firm organizes and coordinates its IT personnel since this type of specialist is being included more frequently on audit engagements. Once the decision has been made to bring an IT specialist onto an audit engagement for the purpose of performing controls testing, not only must the source and qualifications of the specialist be determined, but also how the specialist will interact with and be perceived by other engagement team members.

Using social network theory and literature from the judge-advisor system paradigm, I conjecture a boundary condition for social identity theory (SIT), such that in certain instances there is a preference for the socially dissimilar. In contrast to the standard "social identity" construct, I examine two dimensions of a construct I term "social similarity." The two dimensions of social similarity examined in the current study are 1) domain knowledge distinctiveness and 2) spatial distance, such that a decrease in either of these dimensions reflects an increase in social similarity. In the current study, domain knowledge distinctiveness is either distinct when the IT specialist possesses unique knowledge or overlapping when the IT specialist possesses both unique and shared knowledge relative to the auditor. Spatial distance between the auditor and the IT specialist can be either absent (same office) or present (different offices).[1]

The degree of social similarity between the auditor and the IT specialist is expected to have a significant impact on the auditor's reliance on IT specialists. Accordingly, my overarching research question is as follows: How do the social similarity dimensions of domain knowledge distinctiveness and spatial distance affect financial auditors' reliance on IT

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[1] The absence of spatial distance is in terms of office location and does not reflect zero physical distance between the IT specialist and financial auditor. Thus, in the absence of spatial distance, the IT specialist and financial auditor are from the same engagement office.

2

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specialists? It is imperative to examine the effects of these practice-relevant dimensions of social similarity because audit firms differ in regards to the organization and coordination of IT personnel as well as the type of domain knowledge possessed by IT specialists.[2] Discussions with managers and partners from nine audit firms, including all of the Big Four firms as well as national and regional firms, reveal that firms either position their IT specialists throughout all offices of the firm or locate them at selected offices of the firm for assignment to audit engagements at other offices as needed. In terms of domain knowledge, IT specialists typically have knowledge in the domain of systems design and control and/or financial reporting (Hunton et al. 2004). Social biases induced by differences among IT personnel in terms of office location and domain knowledge have the potential to result in inadequate financial auditor reliance on IT specialists, thereby impairing audit quality by way of audit effectiveness.

Examination of the social similarity dimension of domain knowledge distinctiveness is imperative because financial auditors and IT auditors have distinctive expertise structures (Hunton et al. 2004; Curtis and Viator 2000). While financial auditors develop expertise in generally accepted accounting principles (GAAP) and generally accepted auditing standards (GAAS), IT auditors develop expertise in the domain of systems design and controls (Brazel and Agoglia 2007). Typically, a financial auditor in a manager position will have a CPA (Certified Public Accountant) designation (Bernardi and Arnold 1997), while an IT auditor in an equivalent hierarchical position will hold a CISA (Certified Information Systems Auditor) designation (Hunton et al. 2004). In some situations, financial auditors and IT auditors possess both a CPA designation and a CISA designation (Hunton et al. 2004).

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[2] Similar to other organizations, audit firms make considerable investments in recruiting appropriate talent and providing continuing education to existing personnel.

The distinct types of expertise possessed by these two types of professionals is evidenced by research documenting differences in the knowledge, judgments, and decisions of financial auditors and IT auditors (Curtis et al. 2009). For example, IT auditors consider internal controls from different perspectives than do financial auditors (Curtis and Viator 2000; Viator and Curtis 1998). Additionally, IT auditors are more responsive to seeded control weaknesses in enterprise resource planning (ERP) environments than financial auditors (Hunton et al. 2004). While IT auditors excel in realistically assessing risks in ERP environments, financial auditors display overconfidence in their own abilities in such settings (Hunton et al. 2004). Since financial auditors exhibit overconfidence in their own abilities with respect to assessing IT related control risks, it is likely that the degree of social similarity between the financial auditor and the IT specialist in terms of domain knowledge will impact financial auditors' reliance on IT specialists.

Accordingly, the first research question is as follows: How does the level of domain knowledge distinctiveness of the IT specialist relative to the financial auditor affect the financial auditor's reliance on the controls testing performed by the IT specialist? Specifically, do financial auditors possessing knowledge in the domain of financial reporting (i.e., CPA) make differential adjustments to the audit plan in response to control risk assessments made by IT specialists with distinct knowledge in the domain of IT (i.e., CISA) relative to IT specialists with overlapping knowledge in the domain of financial reporting (i.e., CPA in addition to a CISA)?

The other social similarity dimension examined in this study is the spatial distance between the financial auditor and the IT auditor in terms of office location. Typically, the Big Four firms and national firms maintain IT audit departments for the purposes of providing IT audit support and performing systems assurance services (Vendrzyk and Bagranoff 2003). Similar to financial auditors, the IT audit department usually exists under the broad umbrella of

"assurance" services (Vendrzyk and Bagranoff 2003). Although IT specialists and financial auditors work under the broad umbrella of "assurance services," interviews with managers and partners from nine audit firms (regional, national, and all of the Big Four firms) suggest that IT specialists can be brought onto engagements from different locales. That is, an IT specialist can be brought onto an audit engagement from within the engagement team's office, or, alternatively, from another office of the firm in instances in which the engagement office has already assigned IT specialists to other engagements or when all IT specialists are "housed" in one specific office within the firm. Accordingly, this study investigates whether the decision to outsource IT controls testing to IT specialists from other offices rather than employ IT specialists from within the office (hereafter termed "in-house") has an impact on financial auditors' reliance on these specialists.[3] Spatial distance is expected to influence reliance because it has an impact on the proximity and frequency of interaction (i.e., the strength of the social ties) between the financial auditor and the IT specialist. Thus, the second research question of interest is: How does spatial distance between the IT specialist and the financial auditor affect the financial auditor's reliance on the IT specialist? Specifically, how does the location from which IT specialists are brought onto an engagement affect financial auditors' reliance on the controls testing performed by IT specialists?

Financial auditors' adjustments to the audit plan in response to IT specialists that differ in terms of domain knowledge distinctiveness are expected to depend on (i.e., interact with) the spatial distance between the financial auditor and the IT specialist, leading to this study's final research question of interest: How does the level of domain knowledge distinctiveness of the IT

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[3] In the context of this study and throughout the remainder of the text, "outsourcing" refers to acquiring labor from another office *within* the firm.

specialist affect the financial auditor's reliance on the IT specialist when spatial distance between the financial auditor and the IT specialist changes?

Differential adjustments to the audit plan in response to identical control risk assessments from specialists varying in terms of the aforementioned dimensions of social similarity (i.e., domain knowledge distinctiveness and spatial distance) imply that financial auditors use heuristics that bias audit planning decision processes. The social biases reflected by different audit planning decisions indicate that financial auditors and IT specialists do not always interact as a cohesive team when IT specialists are included on audit engagements.

This study employs a 2×2 between-participants experiment to examine financial auditors' reliance on IT specialists. Participants consisted of 60 auditors. Participants' reliance on the IT specialist is measured as the audit plan adjustments made in response to control risk assessments provided by the IT specialist. The first factor manipulated in this study is domain knowledge distinctiveness: whether the IT specialist has distinct domain knowledge (i.e., a CISA) or overlapping domain knowledge (i.e., a CISA and a CPA). The second factor manipulated is spatial distance: whether the IT specialist is in-house (i.e., absence of spatial distance) or outsourced from another office within the firm (i.e., presence of spatial distance).

Results indicate a "consultant effect"[4] such that financial auditors rely more on the control risk assessments made by IT specialists who are outsourced from a different office within the firm relative to IT specialists who are engaged from within the same office (i.e., in-house). This consultant effect is driven by differences in reliance on IT specialists that possess distinct

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[4] In his book, Kinross defines a consultant as an expert in a specific field with wide knowledge of a subject matter who provides clients with "access to deeper levels of expertise than would be feasible for them to retain in-house" (2013, 5). Consequently, I use the term "consultant effect" to describe my results that reveal increased reliance on specialists outside the engagement office because these specialists are subconsciously perceived as consultants having access to deeper levels of expertise relative to specialists retained in-house.

domain knowledge, since IT specialists that possess overlapping domain knowledge are relied upon equally despite differences in spatial distance. Results also reveal a boundary condition to SIT. Though in-house IT specialists possessing overlapping domain knowledge (i.e., a CISA and a CPA) are not relied upon more than in-house IT specialists with distinct domain knowledge (i.e., a CISA), the pattern of results is consistent with SIT and approaches marginal significance. The opposite occurs when the IT specialist is outsourced. Thus, SIT is expected to hold when the financial auditor and IT specialist are socially similar in terms of spatial distance (i.e., in-house IT specialist) but not when the financial auditor and IT specialist are socially dissimilar in terms of spatial distance (i.e., outsourced IT specialist). I find evidence that the additional reliance on outsourced IT specialists with distinct domain knowledge (i.e., a CISA) over outsourced IT specialists with overlapping domain knowledge (i.e., a CISA and a CPA) is marginally significant, providing some evidence in favor of a preference for the dissimilar. Taken together, my findings suggest that greater social similarity in terms of domain knowledge distinctiveness attenuates the effect of spatial distance on the financial auditor's reliance on an IT specialist.

Finally, I make predictions regarding the social desirability bias exhibited by financial auditors in providing judgments of IT specialist competence. I predict and find that financial auditors assess the competence of IT specialists with overlapping domain knowledge (i.e., a CISA and a CPA) as higher than IT specialists with distinct domain knowledge (i.e., only a CISA), despite the fact that these judgments are inconsistent with actual reliance on IT specialists that are spatially distant. This result provides some evidence that my auditor participants exhibited a social desirability bias when making judgments about the IT specialist's competence. Participants' judgments reflect a social desirability bias because it is expected that individuals with knowledge in two domains would be assessed as possessing higher levels of

7

competence than those with knowledge in a single domain. I also predict and find that financial auditor's judgments of IT specialist competence are not positively associated with the degree to which the financial auditor relies on the IT specialist. Additionally, I predict and find that the financial auditor's level of social identification with the IT specialist suppresses the negative direct effect of financial auditor judgments of IT specialist competence on financial auditor's actual reliance on the IT specialist.

My findings have implications for both practice and theory. Since identical risks in internal controls should be responded to similarly, differences in audit planning attributable to the distinctiveness of the IT specialist's domain knowledge and to the location from which the IT specialist is coming indicate that financial auditors are exhibiting social biases in their reliance decisions, potentially impairing audit quality. Thus, while firms may have considered assimilating these two distinct groups of audit personnel in an effort to improve audit quality, my results suggest that reliance by financial auditors on IT specialists would increase most by housing them in unique offices rather than integrating them into the financial auditors' offices. Audit engagements requiring an IT specialist can outsource IT specialists from these IT specialist "hubs" as needed.

In addition to having implications for practice, this study contributes to the accounting, psychology, and sociology academic literatures. Foremost, this study contributes to the audit and accounting information systems literature by investigating pragmatically relevant factors that result in social biases affecting financial auditors' reliance on IT specialists. This study also contributes to the social psychology literature by establishing a boundary condition to the widely accepted social identity theory, putting forth evidence that a theory of social similarity may be

more descriptive of real-world phenomena as it allows for dimensions of social similarity to interact in affecting behavior.[5]

The paper is organized as follows: Section 2 provides a review of the relevant literature and theory, Section 3 discusses the hypotheses development, the method is described in Section 4, Section 5 explains the results, Section 6 provides a discussion of supplemental analyses, Section 7 provides a discussion of the findings, and Section 8 presents conclusions, implications, limitations, and avenues for future research.

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[5] In this paper, I build on and further develop Kanter's (1977) theory of social similarity. In her book, Kanter describes the role of social similarity in easing the uncertainty faced by members of organizations that are in early stages of growth. Essentially, she argues that conditions of uncertainty force people to rely on others using social bases of trust. While Kanter discusses the role of social similarity in reducing uncertainty and improving communication amongst individuals at managerial levels, I examine the broader organizational implications that two dimensions of social similarity have on auditors' reliance on specialists in an audit setting.

2. LITERATURE REVIEW & THEORY

This section provides a review of relevant accounting literature and theory. In order to answer my research questions, this study employs the following theories to motivate testable hypotheses: Social Identity Theory, the Judge-Advisor System Paradigm, and Social Network Theory.

2.1 Auditing Standards

Several auditing standards provide guidance to external auditors about the factors that should be considered when arriving at a conclusion about whether to include IT specialists[6] on the audit. Code section AU-C 300, *Planning the Audit*, presumptively mandates the auditor of non-public companies to consider the need for specialized skills, such as those possessed by IT specialists, in performing the audit (AICPA 2012). Additionally, Auditing Standard No. 5, *An Audit of Internal Control over Financial Reporting that is Integrated with an Audit of Financial Statements*, has enhanced the role of the IT specialist by requiring auditors of publicly traded companies subject to Section 404 of the Sarbanes-Oxley Act (SOX) to gain an understanding of IT controls and to test those controls in order to provide an opinion over the effectiveness of internal controls over financial reporting (PCAOB 2007). Factors for consideration included in these standards include the complexity of the entity's systems and IT controls as well as the significance of any system changes or new implementations (AICPA 2012). Nonetheless, the

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[6] In practice, IT specialists are referred to as IT auditors. As a result, the terms "IT specialist" and "IT auditor" are synonymous (Harrison 1999).

auditor's decision to include IT specialists on the audit engagement team remains a matter of professional judgment. However, the pervasiveness of IT in the business world today makes it difficult for the financial auditor to justify exclusion of an IT specialist from most audits. Consequently, examination of this particular setting is important since the standards encourage the use of IT specialists on engagements in which the audit client has a complex IT environment.

2.2 Accounting Literature

IT specialists are being employed with increasing frequency due to the widespread implementation of complex information systems such as enterprise resource planning (ERP) systems by small, medium, and large companies. One of the major benefits to complex information systems such as ERP systems is the ability to implement automated internal controls. Prior literature on internal controls indicates that IT-related internal controls serve important and pervasive functions in organizations. For example, material IT control weaknesses are associated with lower financial performance (Carter et al. 2012; Boritz and Lim 2008), have a more pervasive negative impact on the reliability of internal controls over financial reporting (Haislip et al. 2011), and are associated with less accurate management forecasts (Li et al. 2012). Given the negative implications of inadequate or ineffective IT controls and the significant role played by the IT specialist in detecting problems in IT controls, it is no wonder that standard setters presumptively require auditors to consider assigning IT specialists to audit engagements to determine the effect of IT on the audit, to gain an understanding of IT controls, and to design and perform tests of IT controls (AICPA 2012; 2006a; 2006b; 2006c).

Curtis et al. (2009) suggest that it is advisable to involve IT auditors on audit engagements for client's with highly computerized systems. Despite the important role of the IT auditor on many engagements, little research has examined issues pertaining to the interaction of

11

financial auditors and IT auditors (Curtis et al. 2009). There are, however, several studies that indirectly relate to this study.

Research has documented evidence of auditors failing to employ IT specialists on audit engagements for clients with complex systems. Janvrin et al. (2008) conducted a survey of 181 auditors representing Big Four, national, regional, and local firms. Results of the survey indicate that IT specialists are infrequently brought onto the audit, even when the client's systems are complex.[7] Specifically, when audit clients have high levels of IT complexity, 39 out of 50 non-Big Four survey respondents indicated that their frequency of IT specialist use over the past year was low. However, Big Four firms employ IT specialists more frequently for clients high in IT complexity as reflected by 35 out of 40 survey respondents indicating that their frequency of IT specialist use over the past year was high. Since the passage of Section 404 of SOX, however, it has become increasingly difficult for auditors to justify exclusion of the IT specialist on most audit engagements due to the law's increased emphasis on internal controls over financial reporting, many of which are more commonly automated in nature.

It stands to reason that the financial auditor and the IT specialist have unique knowledge and experience making each better suited for certain tasks performed during the course of the audit. In a comparison of risk assessments made by financial auditors and IT auditors, Hunton et al. (2004) find that financial auditors are less likely to understand control risks of more complex ERP systems. Despite this lack of understanding, financial auditors appear overconfident in their ability to assess ERP system risks (Hunton et al. 2004). However, in complex accounting information system (AIS) environments, the information system (IS) expertise of financial auditors appears to be significantly related to their control risk assessments made in response to

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[7] Janvrin et al.'s (2008) study was conducted during the 2002-2003 period; however, Section 404 of SOX was not yet effective.

evidence provided by IT specialists (Brazel and Agoglia 2007). Specifically, the more IS expertise the financial auditor possesses, the better he/she is at adjusting the audit plan in response to evidence gathered by IT specialists (Brazel and Agoglia 2007). As in the Brazel and Agoglia (2007) study, this study examines differences in financial auditors' planning decisions in response to information provided from IT specialists. Unlike Brazel and Agoglia's (2007) examination of the effects of IT specialist competence and the auditor AIS expertise on audit planning decisions, this study examines the effects of dimensions of social similarity (i.e., domain knowledge distinctiveness and spatial distance) on financial auditor planning decisions in an effort to capture the social biases affecting ultimate reliance by financial auditors.

Social aspects of the relationships among audit personnel should be considered when conducting decision research (Bonaccio and Dalal 2006). Kadous et al. (2013) conducted an experiment examining the effect of social bonds and advice justifiability on auditors' willingness to use contrary advice. The authors find that non-specialist auditors rely on a trust heuristic such that they weight evidence from an advisor with a stronger social bond more heavily and without regard to the advice's justification (Kadous et al. 2013). More interestingly, however, specialist auditors rely less on better justified advice from a stronger social bond advisor even though they assess the quality of such advice as higher; the authors posit that the ego-relevant nature of the task may have induced such defensive discounting of the advice (Kadous et al. 2013). Although financial auditors and IT specialists alike assess control risks and perform testing of internal controls, financial auditors are less likely to exhibit defensive discounting of control risk assessments made by IT specialists because of the weaker social bonds between the distinct IT and financial audit practices of the firm's risk assurance group (Vendrzyk and Bagranoff 2003).

13

This study answers calls for research on the consequences of IT auditor interaction with financial auditors on the audit (Curtis et al. 2009; Hunton et al. 2004) and on the characteristics of social contexts that influence decision making (Bonaccio and Dalal 2006).

2.3 Preference for the Similar – Social Identity Theory

Social identity theory (SIT) is a social-psychology theory developed by Henri Tajfel (1978) and John Turner (1975) proposing that individuals classify themselves as well as others into social categories or groups based on common criteria such as age, gender, or religious affiliation (Ashforth and Mael 1989). The purpose of social categorization is two-fold: 1) it allows an individual to make sense of his/her social environment by providing a systematic means of distinguishing others, and 2) permits an individual to socially identify with some human collective or group (Ashforth and Mael 1989). This latter function of social identification is critical to the development of self-concept, which is comprised of both an individual's social identity based on group classifications and personal identity based characteristics that distinguish the individual from others (Ashforth and Mael 1989). Ashforth and Mael define identification as "the perception of oneness with or belongingness to a group, involving direct or vicarious experience of its successes and failures" (1989, 34).

2.3.1 Levels of Social Identification

Individuals will maintain multiple social identities at different levels and based on entirely different factors. For example, a female Hindu external auditor will identify with the following three social groups: 1) women, 2) Hindus, and 3) public accountants. Organizational identification, like other types of social identification, allows an individual to enhance his/her self-esteem by permitting comparisons to be made to others outside the organization (Ashforth and Mael 1989). This process of intergroup comparisons enables an individual to relish the

14

successes and status of his/her organization. In large or complex organizations, however, individuals may also identify at department or work group levels (Ashforth and Mael 1989). While factors such as similarity, proximity, and shared goals are traditionally associated with group formation, these factors alone do not necessarily result in identification (Ashforth and Mael 1989).

2.3.2 Determinants of Social Identification

Given that individuals naturally form part of groups at different levels, SIT suggests that the tendency to identify with groups is a function of three factors: distinctiveness of the group's values and practices relative to those of other groups, prestige of the group, and salience of the out-groups (Ashforth and Mael 1989).[8] The SIT literature labels the group with which an individual identifies an "in-group" and labels other groups to which the individual makes relative comparisons "out-groups."

Distinctiveness of the group's values and practices equates to the uniqueness of the group relative to other groups; hence, the more unique or distinct a group is, the more likely individuals within the group will identify with that group. As group domains and boundaries become better defined and increasingly impermeable, group distinctiveness will increase the tendency for group identification (Ashforth and Mael 1989). The second factor that increases the tendency for group identification, prestige of the group, relates to the notion of social identification as a mechanism to enhance self-esteem. The more prestigious a group, the more likely its members will identify with the group because identification with the group improves self-worth. Finally, increased salience of the out-groups is associated with a greater tendency to identify with a group. Specifically, as an individual's awareness of out-group(s) increases, so does the tendency to

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[8] The terms group identification (group identity) and social identification (social identity) are used interchangeably.

identify with an in-group. Thus, even if a highly prestigious group is very distinct from another group, identification will not occur if the highly prestigious group is unaware of the other group.

2.3.3 Effects of Social Identification

Group identification can occur even in situations lacking interpersonal cohesion, similarity, or interaction among group members and nevertheless impact behavior significantly (Ashforth and Mael 1989). SIT argues group identities are maintained via intergroup comparisons in which individuals seek positive differences between their in-groups and referent out-groups (Ashforth and Mael 1989; Tajfel 1978). As a result, groups will often denigrate reference out-groups in order to perceive or elicit greater differentiation than exists in reality (Ashforth and Mael 1989; Turner 1975). Furthermore, threats to a group's domain or resources only exacerbate such differentiation behavior (Ashforth and Mael 1989).

The aforementioned biases in intergroup comparisons often result in negative stereotyping of out-groups as well as the oversimplification and depersonalization of out-group members (Ashforth and Mael 1989). While the in-group perceives itself as deserving of its accomplishments and not of its failures, the opposite is true for the out-group; as a result, in-group bias justifies the maintenance of social distance and behavior that belittles the out-group (Ashforth and Mael 1989). Furthermore, individuals perceive their in-group as more peaceful, trustworthy, friendly, and honest than out-groups (Brewer 1999). This perception of moral superiority is reinforced by the general preference for the familiar over the unfamiliar (Brewer 1999).

In situations of perceived interdependence and the need for cooperative action, as is the case when financial auditors and IT specialists work together on an audit engagement, the absence of mutual trust between highly differentiated social groups becomes all the more salient

16

(Brewer 1999). Further, shared experiences and cooperation between two distinct social groups threaten the basis for each group's social identification, resulting in a resistance to cooperate and collaborate because groups want to remain distinct (Brewer 1999). One negative aspect of social identification is that the mere existence of another group may prevent intergroup harmony and collaboration (Ashforth and Mael 1989). However, a benefit of social identification is that the trustworthiness of other in-group members can be inferred and thereby increase intragroup harmony and collaboration.

In-group favoritism occurs even when group outcomes are independent of one another; that is, an individual's evaluation of the in-group's output will be more positive compared to an evaluation of objectively identical output from the out-group (Brewer 1979; Ferguson and Kelley 1964). Thus, even in the absence of competitive interdependence between groups, in-group bias persists as evidenced by differentiation (Brewer 1979). In fact, research provides evidence that competition does not initiate differentiation between groups, but rather, differentiation between groups generates competition (Rabbie and Wilkens 1971). Furthermore, differentiated groups or sub-units within an organization may acknowledge each other's unique expertise without necessarily conceding positive differentiation (Ashforth and Mael 1989).

In the context of my study, I expect that spatial distance alone will not suffice for social identification purposes because different offices within an audit firm lack highly distinct values and practices from one another. In addition to the similarity of organizational values and practices within the audit firm, different offices within the same firm are unlikely to differ in terms of prestige since the prestige of the audit firm as a whole encompasses all offices. However, the combination of a shared office location and shared domain knowledge can result in financial auditors identifying with in-house IT specialists who are CISA-CPAs more than in-

17

house IT specialists who possess only a CISA designation. I expect financial auditor reliance on the IT specialist to be higher for IT specialists that form part of the financial auditor's in-group based on two social similarity criteria: domain knowledge distinctiveness and spatial distance. However, financial auditors will not exhibit this in-group bias towards in-house IT specialists possessing a unique single-domain professional designation (i.e., a CISA) because they only have office location as a shared characteristic on which to identify, resulting in lower reliance. This lower reliance results because in-house CISA IT specialists are viewed as out-group members, consistent with SIT. The next section discusses social network theory.

2.4 The Boundary of Preference for the Similar and Dissimilar – Social Network Theory

Although there is a rich stream of research that supports the notion of the individual's preference for the similar as put forth by SIT, I propose that there is a boundary condition to this theory. Though strong social ties typically result in perceptions of more useful knowledge being exchanged because strong social ties provide a relational benefit of implied trust, weak ties can provide a structural benefit of non-redundant information (Levin and Cross 2004). In particular, when perceived trustworthiness is high, weak social ties are a conduit for more useful knowledge than strong ties (Levin and Cross 2004). In the audit setting, financial auditors are expected to perceive IT specialists as trustworthy as they both share the same ultimate objective of providing assurance over the client's financial statements and internal controls over financial reporting.[9] In this scenario, increasing spatial distance (i.e., decreasing the strength of ties) by way of the IT specialist's office location can enhance the preference for and reliance on distinct (as opposed to

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[9] Results indicate that participants in my study assessed the IT specialist to be trustworthy as reflected by a mean response of 6.5 (std. dev. = 2.418) on a 10-point Likert scale ranging from "1-Not at All Trustworthy" to "10-Very Trustworthy." There were no statistical differences in assessments of trustworthiness across groups (F-statistic = 0.689, p-value = 0.562, untabulated).

overlapping) domain knowledge IT specialists, contrary to what would be expected under SIT, thereby resulting in an interaction between the two social similarity dimensions of domain knowledge distinctiveness and spatial distance. The following subsection discusses social network theory and the conditions under which weak ties (i.e., increased spatial distance) increase the perceived usefulness of knowledge imparted by another individual.

Social network research has examined the importance of the strength of ties in knowledge acquisition. Tie strength varies on a continuum from weak, distant and infrequent interaction, to strong, close and frequent interaction (Levin and Cross 2004). While the trust literature provides extensive evidence that trusting relationships result in greater knowledge exchange, social network studies provide evidence demonstrating the benefits of both weak and strong ties (Levin and Cross 2004). One of the benefits of weak ties, in contrast to strong ties, is that they are more likely to provide the benefit of non-redundant (i.e., new) information (Granovetter 1973). Consistent with this notion, members and nonmembers of groups sometimes share stereotypes about their respective groups such that representatives of dissimilar groups could be perceived as having greater competence (Simons et al. 1970). Thus, contrary to SIT, social network theory predicts that there are situations in which decreased identification with a group may not result in denigration of that group in terms of reliance. One such situation is when spatial distance is increased (i.e., ties are weakened).

While there is no question that strong ties result in the transfer of useful information, when perceived trustworthiness is high, weak ties frequently impart knowledge that is perceived as more useful than strong ties (Levin and Cross 2004). Using survey responses from three companies from different countries and industries, Levin and Cross (2004) find that weaker ties

19

(more so than stronger ties) lead to perceptions of the receipt of more useful knowledge when controlling for benevolence-based trust and competence-based trust.

Benevolence-based trust reflects the trust that another individual will not cause intentional harm when given the opportunity, while competence-based trust reflects the belief that another individual is knowledgeable about a given subject (Levin and Cross 2004). Since IT specialists, whether in-house or outsourced, have little or no reason to cause intentional harm by providing inaccurate information to the financial auditor charged with making adjustments to the audit plan, benevolence-based trust is not germane to the current study. However, competence-based trust is germane to the current study because domain knowledge is manipulated and this manipulation may impact perceptions of competence.

In the setting I examine, I propose that the IT specialist from a different office than the financial auditor constitutes a weak tie, while the IT specialist in the same office as the financial auditor constitutes a strong tie. While this study does not measure the perceived receipt of useful knowledge as Levin and Cross (2004) did, it does examine the financial auditor's reliance on such information (i.e., perceived usefulness of the knowledge). Contrary to what would be predicted by SIT, I expect that financial auditors will rely on an IT specialist from another office more than an IT specialist from within the same office when controlling for perceptions of the IT specialist's competence.

2.5 Preference for the Dissimilar – Judge-Advisor System Paradigm

The majority of experimental studies in the advice-taking literature employ the Judge-Advisor System (JAS) paradigm (Gino et al. 2009; Sniezek et al. 2004; Sniezek and Buckley 1995). Since decision-making in an audit engagement context is a social process such that the work (i.e., advice) of more than one person influences judgments and decisions made throughout

the audit, findings from the JAS literature are relevant to this study. A JAS is composed of one or more persons acting as advisors that communicate judgments or recommend alternatives to an individual representing a judge (Sniezek and Buckley 1995). In the context of this study, the IT specialist is the advisor providing a control risk assessment to the financial auditor (judge) responsible for adjusting the audit plan in response to this control risk assessment.

Prior studies in the JAS literature have examined two types of decision tasks performed by the judge: choice tasks or judgment tasks (Gino et al. 2009). Choice tasks involve selection from a set of alternatives, while judgment tasks involve making quantitative estimates. JAS studies also differ in terms of the nature of the advice provided by the advisor. Advice can be provided by someone who is equally informed relative to the judge or someone who possesses expertise (Gino et al. 2009). Advice can be offered by the advisor with the possibility of rejection from the judge, or advice can be provided by default (Gino et al. 2009). Similar to Gino et al. (2009), this study employs a judgment task, expert advisor, and advice offered to participants by default.

Using three JAS experiments, Gino et al. (2009) find that information received from a different advisor is weighted more heavily than information received from a similar advisor when judging *other's* (as opposed to one's own) actions. Unlike SIT, which emphasizes the preference for the similar, this study demonstrates the preference for the dissimilar in the setting of making a judgment about another's actions. In the context of an audit engagement, control risk assessments (as well as inherent risk assessments) are made with the ultimate purpose of adjusting the nature, extent, and timing of audit procedures to be responsive to these risks. The control risk assessment is a judgment about *another* in the sense that the audit client is the object of assessment, not the financial auditor (judge). Accordingly, this study examines the differences

21

in a judge's (i.e., financial auditor) reliance on information provided by advisors (i.e., IT specialists) that are similar (i.e., CISA-CPAs) relative to those that are different (i.e., CISAs) in the context of a situation in which the judgment is being made about another entity (i.e., the audit client).

Recall that the in-group bias described by SIT is not expected to hold when describing reliance on IT specialists that are outsourced from other offices. Instead, the structural benefits of weak ties are expected to result in increased reliance on outsourced IT specialists thereby trumping any in-group bias that would normally result in lower reliance of the outsourced IT specialist. Furthermore, given the context of this study falls within the boundary of a situation in which the advisor is providing an assessment about *another*, I expect that the financial auditor (judge) will respond more to advisors that are different from him/her (i.e., a CISA) relative to those that are similar to him/her (i.e., a CISA-CPA) because the preference for the dissimilar is expected to override an in-group bias when the IT specialist is spatially distant (i.e., outsourced). When outsourced IT specialists do not share in common the CPA professional designation with the financial auditor (i.e., CISA-only IT specialists), control risk assessments will be relied upon more by the financial auditor than the assessments of CISA-CPA IT specialists. The outsourced CISA-only IT specialist will be relied upon by financial auditors most because outsourced CISAs differ from the financial auditor on two dimensions of social similarity: domain knowledge distinctiveness and spatial distance. This increased reliance on spatially distant IT specialists that possess distinct domain knowledge relative to spatially distant IT specialists that possess overlapping domain knowledge likely reflects a perception that the outsourced CISA-only IT specialist is more of an expert or more specialized.

22

Consistent with Levin and Cross' (2004) work evidencing the power of weak ties and contrary to SIT, Gino's (2009) JAS studies suggest that the financial auditor (judge) will likely rely on IT specialists outsourced from another office (i.e., advisors that are dissimilar in terms of office location) more than in-house IT specialists (i.e., advisors that are similar in terms of office location). Furthermore, when outsourced IT specialists do not share the common professional designation of CPA with the financial auditor (i.e., IT specialists possessing only a CISA designation), control risk assessments will be relied upon more by financial auditor CPAs than the assessments of IT specialists possessing both a CISA designation and a CPA designation. The outsourced CISA-only IT specialist will be relied upon by financial auditors most because outsourced CISAs differ from the financial auditor on two dimensions of social similarity: domain knowledge distinctiveness and spatial distance. This increased reliance on CISA-only IT specialists relative to CISA-CPA IT specialists may reflect a perception that the CISA-only IT specialist is more of an expert or more specialized.

2.6 Inconsistent Judgments and Decisions

This section discusses some of the reasons that judgments may not translate into behaviors that are consistent with those judgments.

2.6.1 Self-Report Responses

Nisbett and Wilson's (1977) seminal work on verbal reports of mental processes identifies some of the difficulties inherent in the use of self-report responses. The authors argue that some limitations to self-report responses may reflect inaccuracy of perceptions of the effects of particular stimuli on higher order responses or, alternatively, the use of implicit *a priori* theories about causal relationships instead of actual memories of a cognitive process. As a result, when individuals are making judgments in response to stimuli (i.e., experimental manipulations),

23

their judgments may not be consistent with their subsequent behavior, which operates at a subconscious level; thereby providing unreliable assessments of their higher order cognitive processes.

Furthermore, when individuals are fully aware of the stimuli to which they are responding, they will attempt to use *a priori* theories of causal relationships in order to respond to the questions about their judgments in a manner consistent with their preconceived notions. This results in a social desirability bias such that responses are systematically biased towards the "correct" or socially acceptable response (Fisher 1993), one of the major reasons experimenters are so concerned with demand effects. For example, in the context of this study, financial auditors will likely indicate that they do not consider office location to be an important factor for consideration when adjusting the audit plan in response to control risk assessments provided by an IT specialist. However, actual audit plans will likely reflect that this factor does indeed significantly affect their decisions. The reason for the misalignment between judgments and decisions in this instance is that participants are responding in a socially desirable manner because the office location of the IT auditor "should not" have any impact on their planning decisions.

2.6.2 The Lack of Association between Judgments and Actual Behaviors

In the current study, financial auditors are likely to provide judgments preferring IT specialists with two professional designations (i.e., a CISA and a CPA) to those possessing only one professional designation (i.e., a CISA). This preference is likely to be captured in terms of assessments of competence. However, this socially acceptable view of more designations reflecting more competence than fewer designations is not expected to result in higher reliance on IT specialists possessing overlapping domain knowledge since reliance as a behavior is

24

partially driven by subconscious beliefs. While competence is likely to be assessed as higher for IT specialists that have overlapping domain knowledge with the auditor, actual reliance behavior in terms of changes to the scope of the audit plan is expected to be either negatively associated or not associated with these competence judgments. Therefore, it is important to consider the factors that might explain inconsistencies in or the lack of a relation between these judgments and actual behaviors.

SIT suggests that an individual's social identification with another will result in an in-group bias relative to others with whom they do not socially identify as much. Consequently, the effect of judgments about IT specialist competence on reliance behavior will likely be explained by the extent to which financial auditors identify with the IT specialist. For example, higher assessments of competence that are negatively associated with or not associated with actual reliance behavior will be suppressed by the extent to which the financial auditor socially identifies with the IT specialist. That is, when the extent of financial auditor identification with the IT specialist is taken into account, the non-positive relation between competence judgments and reliance behavior may become more positive. A social identity bias will therefore likely play a role in combatting a social desirability bias because the more a financial auditor identifies with an IT specialist, the less weak the relation between competence judgments and reliance.

3. HYPOTHESES DEVELOPMENT

SIT suggests that financial auditors will exhibit an in-group bias in favor of others with whom they identify. As discussed earlier, social identification can occur at many different levels (e.g., religion, race, gender, workgroup, organization, location). Accordingly, I posit that financial auditors will identify more closely with members of the engagement office that are socially similar in terms of domain knowledge. That is, within the engagement office (i.e., when spatial distance is absent), financial auditors will identify with IT specialists possessing both CISA and CPA designations because of the shared CPA designation. When IT specialists within the engagement team's office possess only a CISA designation, they will be perceived by financial auditors to be members of an out-group.

Based on prior research on social cognition, Greenwald and Banaji (1995) find that social behavior such as social identification often operates in a subconscious fashion. Since financial auditor self-reports of their reliance are expected to operate at a conscious level whereby *a priori* beliefs about causal relations are employed, I use financial auditors' actual reliance decisions to measure the effect of subconscious social identification on behavior. Accordingly, financial auditors are expected to make audit plan adjustments that are more responsive to control risk assessments made by members of their in-groups (i.e., CISA-CPAs from their office) relative to control risk assessments performed by members of an out-group (i.e., CISAs from their office).

Since financial auditors are socially similar to the CISA-CPA IT specialist in terms of both spatial distance (i.e., in-house) and domain-knowledge distinctiveness (i.e., overlapping domain knowledge), it is expected that financial auditors will rely less on in-house CISA IT

26

specialists because they are less socially similar in terms of domain knowledge distinctiveness, although at the same location. When the IT specialist is not spatially distant, social identification with the IT specialist that is more socially similar due to overlapping domain knowledge relative to the financial auditor (i.e., the IT specialist that is also a CPA) is expected to result in greater reliance.

> **H1:** In the absence of spatial distance relative to the IT specialist, financial auditors place greater reliance on IT specialists possessing overlapping domain knowledge than IT specialists possessing distinct domain knowledge.

Given that the spatial distance of the IT specialist relative to the financial auditor can differ depending on whether the IT specialist is in-house or outsourced from another office, my next hypothesis specifically relates to the audit plan adjustments of the financial auditor in response to an IT specialist that is socially *dissimilar* in terms of spatial distance (i.e., from a different office) relative to one that is socially *similar* in terms of spatial distance (i.e., from the same office). Both Gino's (2009) JAS studies and Levin and Cross' (2004) social network study suggest the possibility that IT specialists from another office will be relied upon more by the financial auditor than IT specialists from the financial auditor's office.

As previously discussed, JAS studies conducted by Gino et al. (2009) find that information from a different advisor is weighted more heavily than information provided by a similar advisor under conditions in which another's actions are being evaluated. Since the object of assessment is the audit client (an entity external to the judge), I expect, consistent with Gino et al. (2009), that control risk assessments made by an IT specialist from another office will be relied upon more than those made by an IT specialist from the same office, regardless of whether the IT specialist possesses distinct or overlapping domain knowledge. Furthermore, this prediction is consistent with Levin and Cross' (2004) finding such that weak ties (i.e., different

27

office) will induce greater reliance than strong ties (i.e., same office). Although social identity theory would suggest that reliance would be higher for IT specialists that are socially similar in terms of spatial distance (i.e., in-house), a preference for the dissimilar is expected to override social identification because the presence of spatial distance (i.e., different office) impairs the financial auditor's ability to socially identify with an outsourced IT specialist and because financial auditors subconsciously believe that individuals from other offices are so socially dissimilar that they have unique knowledge. Social dissimilarity in terms of spatial distance will result in perceptions of more unique knowledge because individuals that are farther away are perceived to be more likely to possess non-redundant information relative to those that are proximal. I term this preference for the spatially distant IT specialist a "consultant effect." My predicted "consultant effect" is hypothesized as follows:

> **H2:** Financial auditors rely more on spatially distant IT specialists within the firm than IT specialists that are not spatially distant.

Following up on the notion that a judge will rely more on information from different advisors than similar advisors (Gino et al. 2009), IT specialists from another office are expected to be relied upon more when they possess only a CISA designation relative to when they possess both CISA and CPA designations. When the IT specialist is spatially distant, the preference for the dissimilar CISA IT specialist is expected to trump any social identification with the CISA-CPA IT specialist resulting from a shared CPA designation.

> **H3:** When the IT specialist is spatially distant relative to the financial auditor, financial auditors will rely more on the IT specialists possessing distinct domain knowledge than IT specialists possessing overlapping domain knowledge.

As previously discussed, social behavior often operates in a subconscious fashion (Greenwald and Banaji 1995). As a result, conscious financial auditor assessments of IT specialist competence that are based on the characteristics manipulated in this study (i.e., domain

28

knowledge distinctiveness and spatial distance) are expected to differ from the actual reliance decisions made by the financial auditor. Self-reports regarding perceptions of IT specialist competence may reflect participants' lack of insight into their judgment process (Bonner 2008) or their desire to provide responses that are "politically correct." Contrary to my reliance hypothesis above (H3), I expect financial auditors will make higher assessments of competence for overlapping domain knowledge IT specialists (CISA-CPAs) than distinct domain knowledge IT specialists (CISAs). This is because individuals believe that more education (or more professional designations) serves to develop competence (Schultz 1960). However, at a subconscious level, individuals may exhibit biases in their actual behavior (i.e., reliance decisions as hypothesized in H2 and H3) that indicate they don't truly maintain these conscious beliefs about IT specialist competence.

Unlike actual decisions, financial auditors are expected to make socially desirable judgments about the IT specialist. Despite making audit plan decisions consistent with the aforementioned hypotheses, financial auditors' are expected to perceive IT specialist competence as uniformly higher when they possess overlapping domain knowledge because that reflects knowledge in two distinct domains. Consequently, the competence judgment about an IT specialist with two professional designations (i.e., a CISA and a CPA) is expected to be higher than the competence judgment about an IT specialist with only one professional designation (i.e., a CISA).

H4a: Financial auditors' assessments of competence will be higher for IT specialists possessing overlapping domain knowledge than for IT specialists possessing distinct domain knowledge.

H4b: Financial auditors' assessments of IT specialist competence will not be positively associated with actual reliance on the IT specialist.

Social identification with the IT specialist is likely to play an important role in explaining the absence of a positive relation between competence judgments and reliance decisions as predicted in H4b. I hypothesize that the extent of identification with the IT specialist will suppress inconsistencies between judgments about competence and subconscious reliance decisions. A negative direct effect of competence judgments on the extent of reliance is expected to be suppressed by a positive indirect effect of financial auditor identification with the IT specialist, thus resulting in no overall effect (or a less negative effect) of competence judgments on reliance.

> **H5:** Inconsistencies in financial auditor judgments of IT specialist competence and financial auditor reliance decisions will be suppressed by the extent of financial auditor identification with the IT specialist.

30

4. METHOD

4.1 Participants

Participants in my study were auditors from a cross-section of firms that included Big 4, national and regional firms. Appropriate participants for my study are audit seniors or managers that are involved in making audit planning decisions (Houston 1999). Since auditors typically ascend to the senior staff level after acquiring two years of experience, appropriate participants for my study are auditors with at least two years of experience.[10] Managers and partners that serve in an advisory capacity for the School of Accountancy at a large southeastern university recruited auditors in the Tampa Bay area on my behalf by forwarding an email in which I provided information regarding the study as well as a link to access the online study for participation.

Participants ranged in seniority from staff level to partner and either have a CPA designation or plan on acquiring a CPA designation. Data collection took place during the Fall of 2013. In order to ensure the validity of the data, I include data for auditor participants that completed the study in no more than two hours.[11] Panel A of Table 1 provides descriptive statistics for the sixty auditors that form part of my sample based on the aforementioned

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[10] Only three participants had less than two years of auditing experience.

[11] In some cases, auditor participants took several days to complete the online survey. A total of 127 auditors took part in my study. Sixty-six participants completed the online study and the remaining 59 started the study but never completed it. Six participants that completed the study took longer than two hours to complete the study and are therefore precluded from the final sample of participants. Finally, two participants took a paper and pencil version of the study at a CPE conference.

criterion. On average participants took 35.46 minutes (std. dev. = 21.86 minutes) to complete the study (untabulated).[12]

Twenty-one (35 percent) of the auditor participants are female. Forty-eight (80 percent) auditor participants are CPAs with the remainder planning on acquiring the CPA designation within two years. Approximately 83 percent of the auditor participants hold the positions of senior auditors, managers, or senior managers, making my sample appropriate given these levels of auditors are most often involved in audit planning in practice. My sample reflects a suitable cross-section of firms with 25 (41.7 percent) Big Four auditors, 27 (45 percent) auditors from national firms, and 7 auditors from regional, local, and other firms. None of these frequencies differ statistically across conditions (see Panel A of Table 1).

The average age of participants in the study ranged from 22 to 58 years, with a mean (standard deviation) of 33.6 years (9.04 years). Participants had a mean (standard deviation) of auditing experience of 8.5 years (8.24 years), controls testing experience of 7.2 years (8.17 years), and audit planning experience of 7.59 years (8.42 years). None of these demographic variables differ statistically across conditions (see Panel B of Table 1).

Assessments of motivation, experiment difficulty, case realism, and attentiveness were made by participants in the post-experimental questionnaire using a 9-point Likert scale. Motivation ranged from "1-Very Low" to "9-Very High," difficulty ranged from "1-Very Difficult" to "9-Very Easy," case realism ranged from "1-Very Unrealistic" to "9-Very Realistic," and attentiveness ranged from "1-Not at All Attentive" to "9-Very Attentive." Participants' assessments of motivation (overall mean = 5.70, std. dev. = 1.750), experiment difficulty (overall mean = 5.08, std. dev. = 1.710), case realism (overall mean = 5.60, std. dev. =

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[12] This average time does not include two participants that took a paper and pencil version of the survey at a CPE conference because there was no way to record the amount of time these participants spent on the survey.

Table 1: Descriptive Statistics

Panel A:

		Absent (In-House) Distinct	Absent (In-House) Overlapping	Present (Outsourced) Distinct	Present (Outsourced) Overlapping	Overall	χ²-statistic (*p*-value)
Spatial Distance:		Absent (In-House)		Present (Outsourced)			χ²-statistic
Domain Knowledge:		Distinct	Overlapping	Distinct	Overlapping	Overall	(*p*-value)
Gender	Female	5 (31.2%)	3 (20.0%)	4 (28.6%)	9 (60.0%)	21 (35.0%)	5.958
	Male	11 (68.8%)	12 (80.0%)	10 (71.4%)	6 (40.0%)	39 (65.0%)	(0.114)
	Total	16 (100%)	15 (100%)	14 (100%)	15 (100%)	60 (100%)	
CPA	Yes	13 (81.2%)	10 (66.7%)	12 (85.7%)	13 (86.7%)	48 (80.0%)	2.385
	Pursuing	3 (18.8%)	5 (33.3%)	2 (14.3%)	2 (13.3%)	12 (20.0%)	(0.496)
	Total	16 (100%)	15 (100%)	14 (100%)	15 (100%)	60 (100%)	
Position	Staff Auditor	1 (6.3%)	2 (13.3%)	1 (7.1%)	3 (20.0%)	7 (11.7%)	11.338
	Senior	7 (43.8%)	6 (40.0%)	3 (21.4%)	7 (46.7%)	23 (38.3%)	(0.728)
	Manager	4 (25.0%)	4 (26.7%)	6 (42.9%)	1 (6.7%)	15 (25.0%)	
	Sr. Manager	2 (12.5%)	0 (0.0%)	2 (14.3%)	2 (13.3%)	12 (20.0%)	
	Partner	2 (12.5%)	2 (13.3%)	1 (7.1%)	2 (13.3%)	7 (11.7%)	
	Other	0 (0.0%)	1 (6.7%)	1 (7.1%)	0 (0.0%)	2 (3.3%)	
	Total	16 (100%)	15 (100%)	14 (100%)	15 (100%)	60 (100%)	
Firm Size	Big Four	6 (37.5%)	5 (33.3%)	8 (57.1%)	6 (40.0%)	25 (41.7%)	14.184
	National	5 (31.3%)	8 (53.3%)	5 (35.7%)	9 (60.0%)	27 (45.0%)	(0.289)
	Regional	4 (25.0%)	1 (6.7%)	1 (7.1%)	0 (0.0%)	6 (10.0%)	
	Local/Small	1 (6.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.7%)	
	Other	0 (0.0%)	1 (6.7%)	0 (0.0%)	0 (0.0%)	1 (1.7%)	
	Total	16 (100%)	15 (100%)	14 (100%)	15 (100%)	60 (100%)	

Panel B:

		Absent (In-House) Distinct n = 16	Absent (In-House) Overlapping n = 15	Present (Outsourced) Distinct n = 14	Present (Outsourced) Overlapping n = 15	Overall n = 60	*F*-statistic (*p*-value)
Age	Mean	32.06	34.53	33.07	34.73	33.58	0.291
(years)	Std. dev.	8.14	8.67	10.53	9.49	9.04	(0.832)
	Min	25	25	22	25	22	
	Max	58	54	57	58	58	
Extern. Audit	Mean	8.82	8.50	7.96	8.50	8.46	0.026
Experience	Std. dev.	8.41	8.48	8.06	8.84	8.24	(0.994)
(years)	Min	2.08	0.75	0.33	0.67	0.33	
	Max	35.58	28.67	33.00	35.00	35.58	
Controls Test	Mean	7.64	6.58	6.94	7.70	7.23	0.064
Experience	Std. dev.	8.74	7.19	7.95	9.40	8.17	(0.979)
(years)	Min	0.00	0.00	0.17	0.00	0.00	
	Max	35.58	28.67	33.00	35.00	35.58	
Planning	Mean	7.72	7.78	6.95	7.85	7.59	0.034
Experience	Std. dev.	8.68	8.71	8.29	8.81	8.42	(0.992)
(years)	Min	1.00	0.50	0.00	0.50	0.00	
	Max	35.58	28.67	33.00	35.00	35.58	

2.157), and attentiveness (overall mean = 6.18, std. dev. = 1.790) do not differ statistically across conditions (untabulated).

4.2 Experimental Procedures

In order to test the aforementioned hypotheses, I employ a 2 x 2 between-participants experimental design. The experiment was an online experiment conducted during the Fall of 2013. The online experiment was administered through Qualtrics, a web-based survey platform. The first factor, spatial distance of the IT specialist relative to the financial auditor, is manipulated as 1) absent (i.e., Tampa office) or 2) present (i.e., Houston office). The second factor, domain knowledge distinctiveness is also manipulated at two levels: 1) distinct (i.e., CISA only) and 2) overlapping (i.e., CISA-CPA). Professional designations are used as a proxy for domain knowledge because the CPA designation reflects knowledge in the area of financial accounting, while the CISA reflects knowledge in the area of systems design and controls. This proxy is appropriate since mean assessments of IT specialist expertise in financial statement auditing are higher (F-statistic = 7.925, p-value = 0.007, untabulated) for CISA-CPA IT specialists (mean = 3.57, std.dev. = 1.612) than for CISA-only IT specialists (mean = 2.47, std. dev. = 1.408). Yet, there are no statistically significant differences in perceptions of CISA vs. CISA-CPA IT specialists' expertise in performing IT Control Risk Assessments (F-statistic = 0.060, p-value = 0.808, untabulated).

After reading the informed consent and agreeing to the terms of the informed consent by clicking on the continue button at the bottom of the page, participants were randomly assigned to one of the four experimental conditions (see Figure 1). In an effort to avoid any potential order-effects of describing the IT specialist, D.J. Richards, as possessing both a CISA and a CPA (in that order), within the overlapping domain knowledge conditions, participants were randomly

34

assigned to one of two orders: 1) CISA-CPA, and 2) CPA-CISA. The experimental instrument is included in Appendix A.[13]

| | | **Spatial Distance of IT Specialist** | |
		Absent (Tampa Office)	**Present (Houston Office)**
IT Specialist Domain Knowledge Distinctiveness	**Distinct**	CISA	CISA
	Overlapping	CPA-CISA	CPA-CISA

Figure 1: Experimental Design

Consistent with Joe Brazel's (2004) dissertation instrument, case materials were provided to participants presenting information relating to a hypothetical client (including financial statements and materiality calculations) and relevant authoritative audit guidance from Audit Standard No. 8 (AS No. 8) in regards to the audit risk model (a tool used to aid auditors in audit planning). The case materials indicated to participants that the company's financial statements and materiality calculations could be examined at any time.[14] The case materials directed participants to assume the role of a senior manager assigned to the December 31, 2012 fiscal year-end of the audit of the hypothetical company. Participants were also told, "You have worked for the **Tampa office** of your firm for 7 years and acquired your **CPA (Certified Public Accountant)** designation after being with the firm for 3 years." This information was provided

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[13] The two participants that completed paper versions of the instrument were provided the following: 1) A packet of the demographic questionnaire, case materials, and dependent variable questions; 2) Two manila files containing the financial statement/materiality calculations and control testing/risk assessment workpaper; 3) An envelope labeled Part 1 in which to place packet 1) once the dependent variables questions were completed; and 4) An envelope labeled Part 2 that contained the post-experimental questionnaire. Directions indicated that participants should not refer back to materials placed in the Part 1 envelope when completing the post-experimental questionnaire.

[14] The company's financial statements, materiality calculations, and AS No. 8 guidance could be accessed via hyperlinks throughout the duration of the study. The company's financial statements and materiality calculations were adapted, with permission, from Joe Brazel's (2004) dissertation at Drexel University. A paper drawn from this dissertation was later published in *Contemporary Accounting Research* (Brazel and Agoglia 2007).

35

to place the auditors in the role of an auditor working in the Tampa engagement office and to increase the salience of the manipulations about the IT specialist, D.J. Richards, later on in the experiment.

After reading the background information on the hypothetical company, participants were informed that they had assessed inherent risk at the same level as last year (35 percent) and that they would be receiving working papers from D.J. Richards, the IT specialist responsible for preparing the control testing and risk assessment workpaper. At this point, participants were exposed to the experimental manipulations. Participants in the conditions in which the IT specialist was not spatially distant saw the following:

> **D.J. Richards** is an IT specialist who has worked in **your office (the Tampa office)** of your firm for 6 years and has performed tests of controls on similar audit engagements in the past. D.J. Richards possesses *(BOTH of)* the following professional designation*(s)*, which he acquired after being with the firm for 3 years:
> * **CISA (Certified Information Systems Auditor)**
>   *and*
> * *CPA (Certified Public Accountant)*

Participants in the conditions in which spatial distance between the IT specialist and the financial auditor was manipulated as present saw the following:

> **D.J.** Richards is an IT specialist who has worked in **another office (the Houston office)** of your firm. The only reason an IT specialist is being brought onto the engagement from another office is because your office's IT specialists are all currently assigned to other engagements. D.J. Richards has worked for your firm for 6 years and has performed tests of controls on similar audit engagements in the past. D.J. Richards possesses *(BOTH of)* the following professional designation*(s)*, which he acquired after being with the firm for 3 years:
> * **CISA (Certified Information Systems Auditor)**
>   *and*
> * *CPA (Certified Public Accountant)*

Italicized terms above (and henceforth) refer to the manipulations of domain knowledge distinctiveness, with distinct domain knowledge manipulated as CISA and overlapping domain

knowledge manipulated as CISA and CPA. As previously mentioned, the order of presentation of the two designations was counterbalanced. In order to ensure that the presence of spatial distance represented only the physical distance between the offices and not higher caliber personnel at the other office, the background case materials earlier described the audit firm as having its "national office (headquarters)" in New York. Additionally, the manipulation emphasizes that the "only reason an IT specialist is being brought onto the engagement from another office is because your office's IT specialists are all currently assigned to other engagements." This added wording ensures that the social similarity construct of spatial distance is the only thing being manipulated. In effect, these case facts bias against finding results by ensuring that participants know that the IT specialist was not brought onto the engagement from another office due to a lack of expertise within the engagement office.

At this point, participants were provided access to a hyperlink to a popup window with the Control Testing and Risk Assessment Workpaper prepared by D.J. Richards that corresponded to their randomly assigned condition. Instructions on the screen prompted participants to read the workpaper, indicating that controls were tested by the participant last year, with the initials "YOU" corresponding to their initials, and that controls were tested by D.J. Richards this year, with the initials "DJR" corresponding to his work. To ensure that participants actually opened the workpaper prior to providing judgments about the IT specialist and making audit plan adjustments in response to the control risk assessments made by the IT specialist, participants were instructed to enter into a textbox the workpaper number that was located at the top right-hand side of the workpaper. Participants could not proceed further until the correct workpaper number was entered into the textbox.

The workpaper provided to the participant was structured in such a manner to ensure that the manipulations remained salient throughout the audit planning decision task. In order to ensure the manipulations remained salient, the workpaper was included in a memo. The memo was addressed as follows:

To: YOU, CPA (Cert. Public Accountant), Tampa Office
From: DJR, CISA (Cert. Information Systems Auditor), Tampa Office
             CPA (Cert. Public Accountant)
Re: Control Risk Assessment Workpaper

The workpaper found within the memo included control risk assessments from both the prior year and the current year for each of eight sales and collection cycle controls that were tested as well as the overall control risk assessment for the sales and collection cycle from both the prior year and the current year. The closing at the end of the memo included state symbols of the IT specialist's office location to ensure the salience of the IT specialist's office location; this graphic manipulation was effective as reflected by a 95 percent manipulation check pass rate (see Section 4.3). The closing at the end of the memo read as follows:

Thank you,
D. J. Richards
D.J. Richards, CISA (Cert. Information Systems Auditor), Tampa Office
             CPA (Cert. Public Accountant)
or

Thank you,
D. J. Richards
D.J. Richards, CISA (Cert. Information Systems Auditor), Houston Office
             CPA (Cert. Public Accountant)

After reading the workpaper and moving forward in the online experiment, participants were asked to respond to questions about the strength, accuracy, reliability, source credibility, and trustworthiness of D.J. Richards and his related control testing and risk assessment

38

workpaper. These judgment assessments serve as judgments of the IT specialist's overall credibility. Furthermore, I captured participants' perceptions of the level of expertise possessed by D.J. Richards in terms of IT Control Risk Assessment and, separately, Financial Statement Auditing.

In practice, auditors have access to appropriate audit guidance when working on audit engagements. Prior to moving to the audit planning decision task, participants were provided the option to review AS No. 8 guidance with regard to the Audit Risk Model by accessing the summary of AS No. 8 through a hyperlink. If participants accidentally closed the IT specialist's workpaper or the Financial Statements and Materiality Calculations, they were also provided hyperlinks to access these documents during the audit planning task.

The audit planning decision task required participants to make adjustments to the audit plan from last year.[15] Participants could delete audit procedures or, alternatively, repeat or change the prior year's audit procedures based on the following characteristics for each audit procedure: staffing (staff auditor, senior, or manager), timing of the procedure (interim or final), and extent of procedures (budgeted hours); these measures are consistent with those used by Brazel and Agoglia (2007). Participants could also add audit procedures and indicate the staffing, timing, and extent of such procedures (Brazel and Agoglia 2007).

After completing the audit planning task, participants are asked to close the Control Testing and Risk Assessment Workpaper window. Once they check the box that says, "I have **closed** the window containing the "Control Testing and Risk Assessment Workpaper," participants were permitted to proceed to the rest of the questionnaire. The first questions answered by participants subsequent to the audit planning task were the manipulation check

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[15] This task was taken, with permission, from Joe Brazel's (2004) dissertation at Drexel University. A paper drawn from this dissertation was later published in *Contemporary Accounting Research* (Brazel and Agoglia 2007).

questions. After answering the manipulation check questions, participants proceeded on to the post-experimental questionnaire.

4.3 Manipulation Checks

In order to determine whether participants were sensitive to the manipulations in my study, I included two manipulation check questions in the post-experimental questionnaire right after the audit planning decision task. Fifty-seven participants (95 percent) answered the spatial distance (i.e., office location) manipulation check question correctly and 51 participants (85 percent) answered the domain knowledge distinctiveness (i.e., professional designation) manipulation check question correctly (untabulated).

The frequency of manipulation check failures across conditions was nonsignificant for both the spatial distance manipulation check question (Pearson χ^2 = 3.772; asymp. *p*-value = 0.287, untabulated) and the domain knowledge distinctiveness manipulation check question (Pearson χ^2 = 1.181; asymp. *p*-value = 0.758, untabulated). These results indicate that the data collected from the auditor participants in my study are of good quality.

4.4 Post-Experimental Questionnaire

The first set of questions in the post-experimental questionnaire was composed of assessments of D.J. Richard's competence, the strength of the controls listed in the workpaper, the overall conclusion about the reliability of controls, participant confidence in the audit plan decisions made, and how costly the participant believed it was to employ D.J. Richards relative to the average staff auditor. I measure perceptions of cost because a potential explanation of increased reliance on and/or perception of competence for IT specialists from a different office location may be attributed to a paid-advice effect (Gino 2008; Arkes and Blumer 1985). This

40

effect, consistent with the sunk cost fallacy (Arkes and Blumer 1985), suggests that financial auditors may assume that the IT specialist should be relied upon more because the audit engagement has already incurred the cost of bringing this individual in from another office.

While financial auditors are expected to rely on IT specialists that are more dissimilar in terms of spatial distance (i.e., from a different office), this effect may be attributed to perceptions of the cost of advice from these specialists. For example, if an IT specialist is being brought onto an engagement from a geographically distant office in the audit firm, engagement team members may perceive a higher cost associated with employing that individual than an in-house IT specialist. Consistent with this notion, Gino (2008) finds that individuals are significantly more receptive to advice that costs money compared to free advice. This paid-advice effect appears to be attributed to the same forces that have been documented in prior studies illustrating the sunk cost fallacy—justifying the cost of advice by using the received information to avoid regret of spending money on the advice (Gino 2008; Arkes and Blumer 1985).

The post-experimental questionnaire also included assessments of participants' identification with D.J. Richards, participants' perceptions of the impact of the IT specialist's office location and professional designation(s) on audit plan adjustments, participants' perceptions of the impact of the financial statements on audit planning, and participants' perceptions of the impact of office location and professional designation(s) on competence assessments of the IT specialist.

Next participants were reminded of the experimental manipulations to which they were exposed and again asked questions about the strength, accuracy, reliability, source credibility, and trustworthiness of D.J. Richards. Once again, I also captured assessments of the participant's

perception of the level of expertise possessed by D.J. Richards in terms of performing IT Control Risk Assessments and, separately, Financial Statement Auditing.

Subsequently, participants indicated their agreement with statements meant to capture their perceptions of the exclusivity of the CPA profession and perceptions about the value (or lack thereof) of additional designations. Participants were then asked to describe the type of auditor they are on a 5-point Likert scale ranging from "1-Financial Auditor" to "5-IT Auditor," the extent to which the participants' actual audit engagements utilize IT specialists from other offices outside the engagement office, the primary reason for bringing in IT specialists from other offices, and the level of the participants' expertise with accounting information systems relative to other auditors at their firm. Finally, participants were asked to indicate their level of motivation in completing the study, perceptions of experiment difficulty, perceptions of case realism, and attentiveness while participating in the experiment.

5. RESULTS

Figure 2 illustrates the specific pattern of cell means for extent of reliance on the IT specialist predicted by H1, H2, and H3, collectively. The level of acceptable risk of Type I error (i.e., level at which I consider results significant) employed throughout my dissertation is $\alpha = 0.05$. For a summary overview of results of hypotheses tests, see Figure 12).
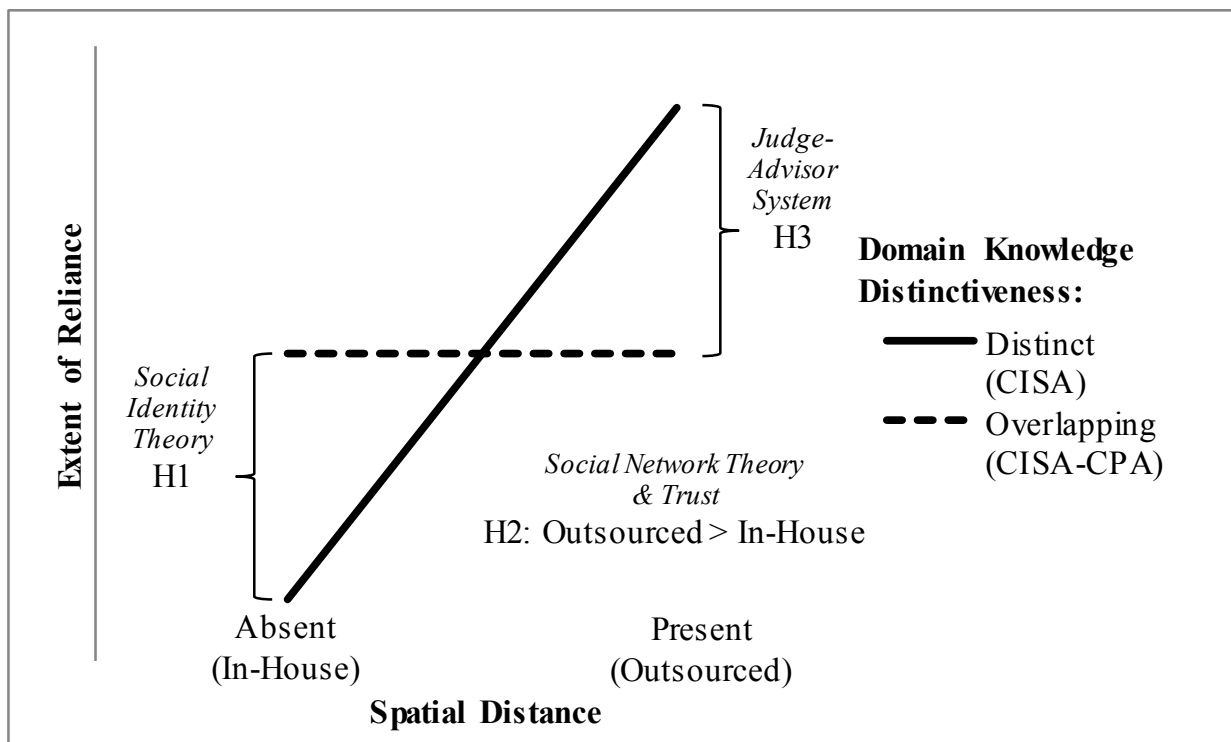
Figure 2: Predicated Pattern of Means Predicted by H1, H2, and H3

5.1 Reliance Dependent Variable

In order to capture the financial auditor's degree of reliance on the IT specialist, I use the financial auditor's planning decisions to create a variable I term "quality budget hours." Since the participants in my study make decisions related to staffing, timing, and budgeted hours of

43

various audit procedures, I first coded each of the first two variables (staffing and timing) as ordinal variables. Staff auditors are assigned a value of 1 since they correspond to the lowest level of audit staff, seniors are assigned a value of 2 since they are the next level up in the staff hierarchy, and managers are assigned a value of 3 since they are the highest level that would perform substantive audit testing. Because audit procedures performed at interim are less reliable than those that are performed at year-end (i.e., final), procedures scheduled to be performed at interim are assigned a value of 1, while year-end procedures are assigned a value of 2. Total quality budget hours per audit procedure is then calculated as the product of staffing (1, 2, or 3), timing (1 or 2), and number of budgeted hours. The total quality budget hours for all audit procedures is then aggregated to proxy for the extent of financial auditor reliance on the IT specialist. Had participants in the study made no changes to the prior year audit plan, total quality budget hours would sum to 108 hours.

Planned quality budget hours satisfy assumptions of homogeneity of variance across treatments (Levene's Test, F-statistic = 2.253, p-value = 0.092). Additionally, Shapiro-Wilk's tests of the assumption of normality indicate the planned quality budget hours variable is normally distributed across two conditions. The two conditions in which the normality assumption is not satisfied are both in-house conditions (p-value < 0.009). However, $ANCOVA$ is robust to slight violations of these assumptions due to the near balanced nature of my cell sizes (Hair et al. 2010).

5.1.1 Effect of Domain Knowledge Distinctiveness and Spatial Distance on Reliance

Figure 3 depicts the estimated marginal means of quality budget hours planned for by auditors in my study by condition. The estimated marginal means of this dependent variable measure of reliance appear to follow the same pattern as the predicted pattern depicted in Figure

44

2. Table 2 provides descriptive statistics for the quality budget hour dependent variable measure by condition (Panel A) and an *ANCOVA* testing differences among the conditions on this measure (Panel B).[16]
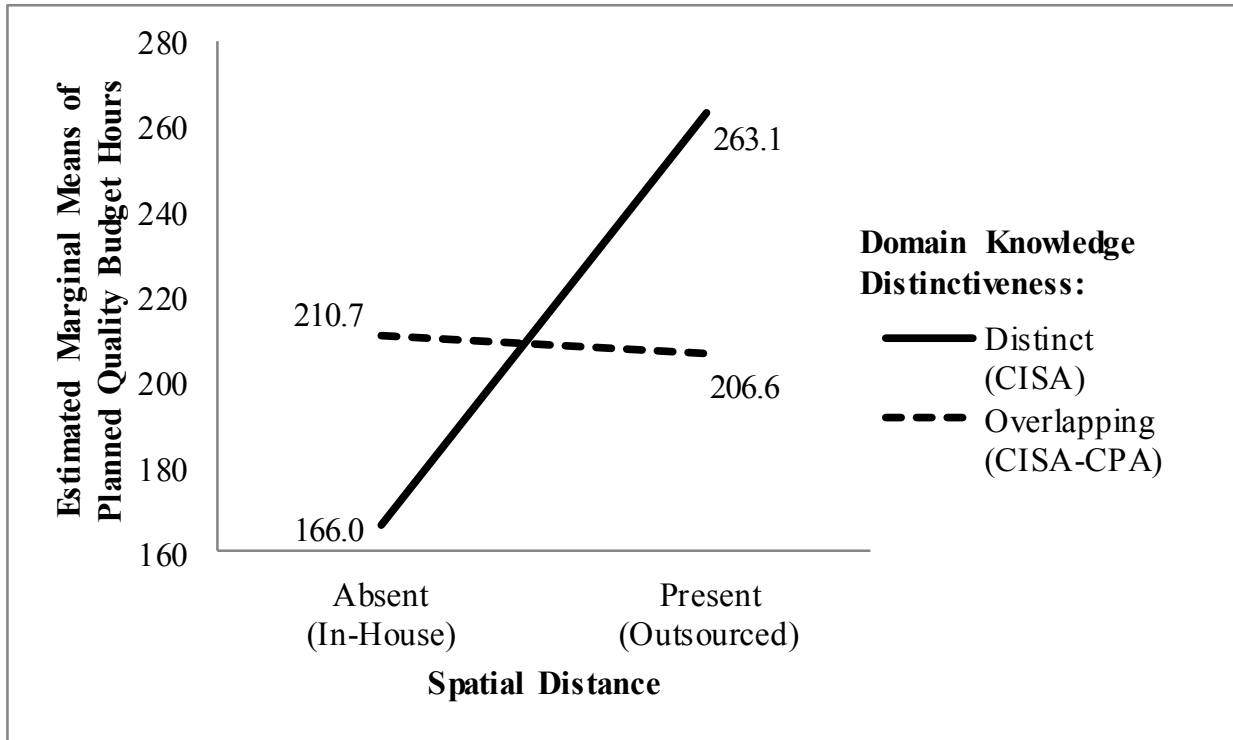
Figure 3: Planned Quality Budget Hours

The *ANCOVA* model used to test H1, H2, and H3 is found in Panel B of Table 2 and includes the total number of months of audit planning experience and perceived IT specialist competence as covariates (Global *F*-statistic = 4.111, *p*-value = 0.003). Recall that Levin and Cross (2004) suggest that weak ties are more powerful than strong ties when controlling for

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[16] Levene's test of equality of error variances on the simple *ANOVA* indicate that the quality of budget hours dependent variable satisfies the assumption of homogeneity of variance (*F*-statistic = 2.253, *p*-value = 0.092, untabulated). However, this assumption is not satisfied for the *ANCOVA* model that includes number of months of planning experience and perceived IT specialist competence as covariates in the model (*F*-statistic = 3.427, *p*-value = 0.023, untabulated). Covariates included in the model are uncorrelated with and do not interact with the independent variables, satisfying conditions for an effective *ANCOVA*. To address the heteroscedasticity issue, I estimate a non-parametric rank regression in which the planned quality budget hours variable is ranked. Results of the non-parametric test are qualitatively similar to the *ANCOVA* results found in Table 2.

Table 2: Effect of Spatial Distance & Domain Knowledge Distinctiveness on Planned Quality Budget Hours

Panel A: Planned Quality Budget Hours, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	Cell 1 166.01 (24.33) n = 16	Cell 3 263.12 (25.76) n = 14	214.56 (17.78) n = 30
	Overlapping	Cell 2 210.70 (24.84) n = 15	Cell 4 206.65 (25.27) n = 15	208.67 (17.75) n = 30
		188.356 (17.36) n = 31	234.88 (17.95) n = 29	211.62 (12.43) n = 60

Panel B: *ANCOVA* Model of Planned Quality Budget Hours

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	190094.867	5	4.111	0.003
Spatial Distance (H2)	31829.018	1	3.441	0.069
Domain Knowledge Distinctiveness	497.499	1	0.054	0.817
Spatial Distance × Domain Knowledge Dist. (H1&H3)	8220.092	1	4.132	0.047
Audit Planning Experience	98638.948	1	10.665	0.002
IT Specialist Competence	27422.047	1	2.965	0.091
Error	499455.133	54		

$R^2 = 0.276$; Adjusted $R^2 = 0.209$

Panel C: Pairwise Comparisons

Comparisons (EMM Diff. [Std. Error])		95% Conf. Interval	Hypothesis	*p*-value*
Cell 1 vs. Cell 2	(-44.69 [34.824])	-114.51, 25.13	H1	0.205
(Cells 3+4)/2 vs. (Cells 1+2)/2	(46.52 [25.079])	-3.76, 96.81	H2	0.069
Cell 3 vs. Cell 4	(56.47 [36.267])	-16.24, 129.18	H3	0.125

The dependent variable "planned quality budget hours" is a proxy for degree of reliance on the IT specialist. It is calculated as the aggregate of the products of staffing, timing, and budgeted hours for each procedure for the sales and collection cycle. Staffing is an ordinal variable capturing the experience of the staff performing the procedure (1 = staff auditor, 2 = senior, 3 = manager). Timing is also an ordinal variable capturing the reliability of a procedure performed either at interim (1) or at year-end (2).

Covariates included in the model are the total number of months of audit planning experience and perceived IT specialist competence (measured on an 11-point Likert scale ranging from "1-Very Low" to "11-Very High."

* The *p*-value in Panel C is the two-tailed *p*-value based on Least Significant Difference.

competence-based trust; consequently, inclusion of perceived IT specialist competence in the model is warranted. The *ANCOVA* model detects a marginally significant main effect of spatial distance (F-statistic = 3.441; p-value = 0.069). Additionally, the model detects a statistically significant interaction between spatial distance and domain knowledge distinctiveness (F-statistic = 4.132; p-value = 0.047), providing preliminary support for H1 and H3 because the estimated marginal means tabulated in Panel A of Table 2 are directionally consistent with both H1 and H3.[17]

H1 predicts that financial auditors will rely on in-house IT specialists more when they possess overlapping domain knowledge. Consistent with H1, the estimated marginal mean (standard error) of planned quality budget hours is 210.70 hours (24.84 hours) for participants responding to control risk assessments made by in-house IT specialists possessing overlapping domain knowledge and 166.01 hours (24.33 hours) for participants responding to control risk assessments made by in-house IT specialists with distinct domain knowledge.

H3 predicts that financial auditors will rely on outsourced IT specialists more when the IT specialists have distinct domain knowledge. Consistent with H3, the estimated marginal mean (standard error) of planned quality budget hours is 263.12 hours (25.76 hours) for participants responding to control risk assessments made by outsourced IT specialists possessing distinct domain knowledge and 206.65 hours (25.27 hours) for participants responding to control risk assessments made by outsourced IT specialists with overlapping domain knowledge.

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[17] When the ten participants that failed either of the manipulation check questions are excluded from the analysis, results of the *ANCOVA* are qualitatively similar. Though the pattern of reliance is consistent with the pattern in Figure 3, the lower power of my test fails to detect significance on the spatial distance main effect (F-statistic = 2.633, p-value = 0.112, untabulated) or on the interaction of domain knowledge distinctiveness and spatial distance (F-statistic = 2.456, p-value = 0.124, untabulated).

5.1.2 Effect of Domain Knowledge Distinctiveness on Reliance when Spatial Distance is Absent and when Spatial Distance is Present

In order to more specifically test H1 and H3, I perform Least Square Differences (LSD) pairwise comparisons (see Panel C of Table 2). H1 predicts that planned quality budget hours will be higher for in-house IT specialists possessing overlapping domain knowledge than for in-house IT specialists possessing distinct domain knowledge, while H3 predicts planned quality budget hours to be higher for outsourced IT specialists with distinct (as opposed to overlapping) domain knowledge.

Results of the pairwise comparisons provide nearly marginal support for H1 and marginal support for H3. The difference in the estimated marginal means of planned quality budgets hours between overlapping domain knowledge (EMM = 210.70, std. error = 24.84) and distinct domain knowledge (EMM = 166.01, std. dev. = 24.33) when the IT specialist is in-house is almost marginally significant (EMM difference = 44.69, one-tailed p-value = 0.103, 95% CI: [-114.51, 25.13]), providing no support for H1. When the IT specialist is outsourced, the difference in the estimated marginal means of planned quality budgets hours between distinct domain knowledge (EMM = 263.12, std. error = 25.76) and overlapping domain knowledge (EMM = 206.65, std. dev. = 25.27) is not statistically significant either (EMM difference = 56.47, one-tailed p-value = 0.063, 95% CI: [-16.24, 129.18]), providing some evidence in support of H3.

The pairwise comparison of the estimated marginal means of planned quality budget hours between the conditions in which spatial distance between the IT specialist and financial auditor is present and the conditions in which there is no spatial distance between the IT specialist and the financial auditor reveals a marginally statistically significant difference (EMM difference = 46.52, one-tailed p-value = 0.035, 95% CI: [-3.76, 96.81]), providing support for H2.

Though I make no prediction with regards to the difference in reliance on IT specialists with overlapping domain knowledge that are in-house vs. outsourced, the pairwise comparison of the estimated marginal means of planned quality budget hours for these conditions reveals that the difference is not statistically significant (EMM difference = 4.06, p-value = 0.909, 95% CI: [-66.84, 74.96], untabulated). This result indicates that the difference in planned budget hours across the two levels of spatial distance as predicted by H2 is driven entirely by conditions in which the IT specialist possesses distinct domain knowledge and not overlapping domain knowledge. This effect is further supported by the statistically significant difference between the estimated marginal means of planned quality budget hours for distinct domain knowledge IT specialists that are in-house and distinct domain knowledge IT specialists that are outsourced (EMM difference = -97.11, two-tailed p-value = 0.008 , 95% CI: [-167.87, -26.34], untabulated). Thus, H2 is supported solely because of the differences in financial auditor reliance on IT specialists from different office locations that possess distinct domain knowledge.

5.2 Judgments about the IT Specialist's Competence

Participants made an assessment of the level of competence of the IT specialist in the post-experimental questionnaire. The level of competence was measured using an 11-point Likert scale ranging from "1-Very Low" to "11-Very High." Assessments of competence satisfy assumptions of homogeneity of variance across treatments (Levene's Test, F-statistic = 1.736, p-value = 0.170). Additionally, Shapiro-Wilk's tests of the assumption of normality indicate competence is normally distributed across all conditions with the exception of the outsourced-distinct domain knowledge condition (p-value = 0.014). However, *ANCOVA* is a robust method given the near balanced nature of my design (Hair et al. 2010).

49

5.2.1 Effect of Domain Knowledge Distinctiveness on Judgments

Figure 4 depicts participants' estimated marginal mean competence ratings of the IT specialist by condition when controlling for perceptions of IT specialist expertise in performing IT control risk assessments. Table 3 provides descriptive statistics for competence assessments by condition (Panel A) as well as *ANCOVA* and pairwise comparison results pertaining to H4a (Panels B and C, respectively).[18] H4a predicts that assessments of competence will be higher for
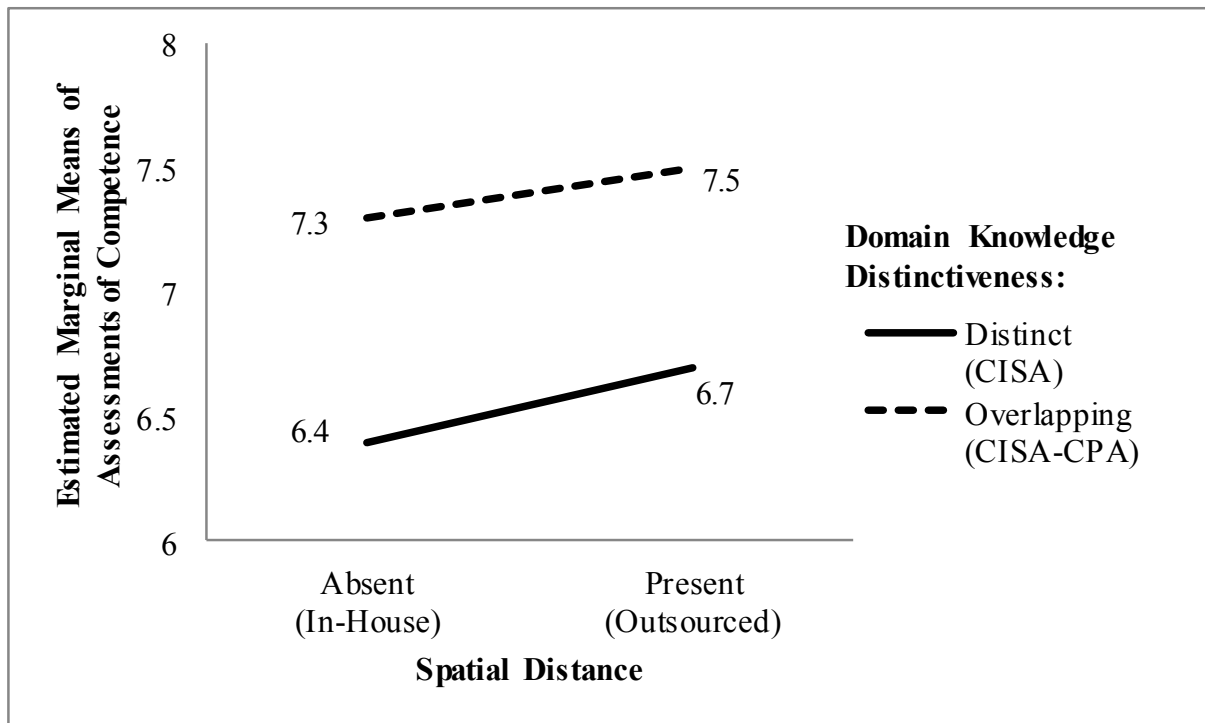
Figure 4: Assessments of Competence

IT specialists possessing overlapping domain knowledge than for IT specialists possessing distinct domain knowledge. Results indicate that domain knowledge distinctiveness does have a statistically significant main effect on assessments of competence (*F*-statistic = 4.340, *p*-value =

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[18] Levene's test of equality of error variances indicates that estimated marginal mean assessments of competence exhibit homogeneity of variance across conditions when IT specialist expertise is included as a covariate (*F*-statistic = 0.906, *p*-value = 0.444, untabulated). Furthermore, the covariate included in the model is uncorrelated with and does not interact with the independent variables, satisfying conditions for an effective *ANCOVA*.

Table 3: Effect of Domain Knowledge Distinctiveness on Assessments of Competence

Panel A: Assessments of Competence, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	Cell 1 6.37 (0.40) n = 16	Cell 3 6.71 (0.43) n = 14	6.54 (0.30) n = 30
	Overlapping	Cell 2 7.28 (0.42) n = 15	Cell 4 7.53 (0.42) n = 15	7.41 (0.30) n = 30
		6.83 (0.29) n = 31	7.12 (0.30) n = 29	6.972 (0.21) n = 60

Panel B: *ANCOVA* Model of Assessments of Competence

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	220.119	4	21.045	<0.001
Spatial Distance	1.290	1	0.493	0.485
Domain Knowledge Distinctiveness (H4a)	11.348	1	4.340	0.042
Spatial Distance × Domain Knowledge Dist.	0.028	1	0.011	0.918
IT Specialist Expertise	198.710	1	75.994	<0.001
Error	455469.708	55		

$R^2 = 0.605$; Adjusted $R^2 = 0.576$

Panel C: Pairwise Comparison

Comparisons (EMM Diff. [Std. Error])	95% CI	Hypothesis	*p*-value*
(Cells 2+4)/2 vs. (Cells 1+3)/2 (0.87 [0.418])	0.03, 1.71	H4a	0.042

Assessments of level of competence of the IT specialist were made in the post-experimental questionnaire and were measured using an 11-point Likert scale ranging from "1-Very Low" to "11-Very High."

The covariate included in the model is perceived IT specialist expertise in terms of performing IT control risk assessments (measured on an 7-point Likert scale ranging from "1-Low Level of Expertise" to "4-Moderate Level of Expertise" to "7-High Level of Expertise").

* The *p*-value in Panel C is the two-tailed *p*-value based on Least Significant Difference.

0.042)[19], providing support for H4a. Further support for H4a is provided by the statistically significant pairwise comparison of the estimated marginal means of the distinct and overlapping domain knowledge conditions (EMM difference = 0.87, one-tailed *p*-value = 0.021, 95% CI: [0.03, 1.71]). Thus, H4a is supported.

5.2.2 The Relation between Assessments of Competence and Actual Reliance Decisions

H4b predicts that financial auditors assessments of IT specialist competence will be negatively correlated (or uncorrelated) with planned quality budget hours (i.e., actual reliance decisions). In order to test H4b, I estimate the following regression model (see Table 4):

$$PlannedQualityBudgetHours \ = \ \beta_0 + \beta_1 Competence + \beta_2 AuditPlanningExperience + \beta_3 ReliabilityofControls + \ \varepsilon \qquad (1)$$

While the Shapiro-Wilk's test of normality suggests a violation of the assumptions of normality for the planned quality budget hours dependent variable; visual examination of the histogram of standardized residuals suggests that the distribution is relatively normal. Furthermore, visual examination of a scatterplot of the standardized residuals vs. the standardized predicted values indicate no pattern exists that is suggestive of a violation of the assumption of homoscedasticity or linearity. The assumption of linearity, $E[\varepsilon] = 0$, is also satisfied as visual examination of the scatterplots of the independent variables against the standardized residuals do not indicate the presence of curvilinear patterns. Thus, all assumptions underlying regression appear to be satisfied for equation (1) above.

Covariates included in the model include audit planning experience in months and perception of the reliability of the controls based on the IT specialist's overall control risk

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[19] When the ten participants that failed either of the manipulation check questions are excluded from the analysis, results of the *ANCOVA* continue to reveal the statistically significant main effect of domain knowledge distinctiveness (*F*-statistic = 5.133, *p*-value = 0.028, untabulated).

Table 4: Relation between Assessments of Competence and Actual Reliance Decisions

$$PlannedQualityBudgetHours = \beta_0 + \beta_1 Competence + \beta_2 AuditPlanningExperience + \beta_3 ReliabilityofControls + \varepsilon \qquad (1)$$

Explanatory Variables	Pred. Sign	Coefficient	Std. Error	t-statistic	p-value (2-tailed)
(Constant)		284.252	49.495	5.778	<0.001
Competence (H4b)	$-/\varnothing$	-7.236	5.164	-1.401	0.167
Audit Planning Experience	?	0.384	0.126	3.034	0.004
Reliability of Controls	$-$	-10.883	5.931	-1.835	0.072

Global F-statistic = 5.281, p-value = 0.003
R^2 = 0.221; Adjusted R^2 = 0.179

The dependent variable "planned quality budget hours" is a proxy for degree of reliance on the IT specialist. It is calculated as the aggregate of the products of staffing, timing, and budgeted hours for each procedure for the sales and collection cycle. Staffing is an ordinal variable capturing the experience of the staff performing the procedure (1 = staff auditor, 2 = senior, 3 = manager). Timing is also an ordinal variable capturing the reliability of a procedure performed either at interim (1) or at year-end (2). Covariates included in the model are total number of months of audit planning experience and perceived reliability of the controls based on the IT specialist's overall control risk assessment (measured on an 11-point Likert scale ranging from "1-Very Unreliable" to "11-Very Reliable."

assessment. I make no predictions about the relation between the extent of audit planning experience and planned quality budget hours. However, I expect a negative association between reliability of controls and planned quality budget hours because perceptions of more reliable controls should allow for reducing the scope of planned substantive tests in the audit plan. Consistent with H4b, results of the equation (1) regression found in Table 4 indicate that financial auditors' assessments of competence (i.e., judgments) are negatively associated with planned quality budget hours (i.e., actual reliance decisions) and this association is marginally significant (β_1 = -7.236, std. error = 5.164, t-statistic = -1.401, one-tailed p-value = 0.084). Also as expected, perceptions of the reliability of controls are negatively associated with the number

quality budget hours planned (β_3 = -10.883, std. error = 5.931, *t*-statistic = -1.835, one-tailed *p*-value = 0.036).[20] Thus, H4b is supported.

5.2.3 Identification as a Suppressor of the Relation between Assessments of Competence and Actual Reliance Decisions

H5 predicts that the inconsistent (non-positive association) between assessments of competence and actual reliance decisions is suppressed by the financial auditor's level of identification with the IT specialist. To test this hypothesis, I conduct a bootstrapping mediation analysis, which is estimated using 1,000 bootstrap iterations (see Hayes 2012). Figure 5 illustrates the conceptual model predicted by H5 as well as the estimated path coefficients for the model. Results in Figure 5 provide support for H5. The statistically significant negative direct

Assessments of IT specialist competence is measured on an 11-point Likert scale ranging from "1-Very Low" to "11-Very High."
Auditor identification with the IT specialist is an average of three items measured using 9-point Likert scales with higher values representing greater levels of identification.
Reliance is measured as total quality budget hours planned by the financial auditor for the current year audit.
Covariates included in the mediation model above include audit planning experience in months and perceived reliability of the controls based on the IT specialist's overall control risk assessment.
All *p*-values in this figure are two-tailed.

Figure 5: Identity as a Suppressor

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[20] When the ten participants that failed either of the manipulation check questions are excluded from the regression analysis, results reveal a statistically significant negative relation between competence and planned quality budget hours (β_1 = -11.281, *t*-statistic = -2.093, one-tailed *p*-value = 0.021).

effect of competence on reliance (effect = -10.74, *p*-value = 0.039) is suppressed by the

statistically significant indirect effect through identification (effect = 3.507, *p*-value < 0.05),

resulting in a marginally significant negative total effect of competence on reliance (effect = -

7.24, one-tailed *p*-value = 0.084).[21] Thus, H5 is supported.

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[21] When the ten participants that failed either of the manipulation check questions are excluded from the mediation analysis, results are directionally consistent; however, the indirect effect of competence on reliance through identification is not statistically significant (untabulated), likely due to a lack of power.

6. SUPPLEMENTAL ANALYSIS

This section discusses exploratory findings related to variables that provide insight about auditors' perceptions in practice. I also provide a more detailed analysis of auditor reliance by examining the different types of changes made to the scope of the audit plan (i.e., nature, staffing, timing, and extent).

6.1 Credibility Assessments, Paid-Advice Perceptions, Exclusivity Perceptions, and Perceptions of Dilution

Credibility assessments and exclusivity perceptions are composite measures made up of various items. The credibility assessments were made by participants both after exposure to the manipulations but prior to the audit planning decision task as well as subsequent to the audit planning decision task when they were reminded about D.J. Richard's office location and professional designation(s).[22] Exclusivity perceptions and perceptions of dilution were captured in the post-experimental questionnaire.

6.1.1 Perceived IT Specialist Credibility

In order to capture participants' perceptions of IT specialist credibility, I gathered assessments about five statements. Statements related to the strength of control testing performed by the IT specialist (1-Very Weak to 10-Very Strong), the accuracy of the IT specialist's control risk assessments (1-Not Accurate to 10-Very Accurate), the reliability of the workpaper prepared

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[22] The reminder of the IT specialist's office location and professional designation was specified on screen according to participant's previously randomly assigned condition.

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by the IT specialist (1-Not Reliable to 10-Very Reliable), the credibility of the IT specialist as a source of control testing and risk assessment (1-Not at All Credible to 10-Very Credible), and the trustworthiness of the IT specialist with respect to preparing the control testing and risk assessment workpapers (1-Not at All Trustworthy to 10-Very Trustworthy). A principal component factor analysis of these five items indicates that all five items load onto one component, or construct. The five items have good internal consistency and appear to measure the same construct as indicated by a Cronbach's alpha of 0.951 for the measures taken prior to the audit planning task and 0.964 for the measures taken in the post-experimental questionnaire after reminding participants about the IT specialist's office location (i.e., spatial distance) and professional designation(s) (i.e., domain knowledge distinctiveness). As a result, I average the five pre-task (post-experimental) items to reflect participants' assessments of IT specialist credibility at those separate points in time.

First, I examine the correlation between the pre-task and post-experimental assessments of IT specialist credibility and find that these two measures are highly correlated (Pearson $r =$ 0.885, two-tailed p-value < 0.001). The mean (standard deviation) pre-task assessment of IT specialist credibility is 6.21 (2.138), while the mean (standard deviation) of post-experimental assessment of IT specialist credibility is 6.52 (2.05). I estimate a *MANCOVA* to test for differences between conditions on these two credibility measures. The omnibus test for a fully crossed model including the independent variables of domain knowledge distinctiveness and spatial distance and including covariates of participants' firm size and participants' perceptions about what type of auditor they are (ranging from "1-Financial Auditor" to "5-IT Auditor") was non-significant (untabulated), indicating that there are no differences in assessments of IT specialist credibility across conditions.

Next, I create a difference variable of the IT specialist credibility assessment by subtracting the pre-task average IT specialist credibility measure from the post-experimental (i.e., after a reminder of the manipulations) average IT specialist credibility measure. I estimate an *ANCOVA* in which I control for the participant's firm size and the type of auditor they perceive themselves to be (Global *F*-statistic = 2.664, *p*-value = 0.032).[23] Estimated marginal means of the credibility difference score can be found in Panel A of Table 5. *ANCOVA* results found in Panel B of Table 5 indicate that there is a statistically significant main effect of spatial distance on the difference scores of IT specialist credibility (*F*-statistic = 4.790, *p*-value = 0.033). Post-experimental IT specialist credibility is assessed as higher than pre-task IT specialist credibility for IT specialists that are not spatially distant (mean = 0.58, std. error = 0.17, Panel A of Table 5), while there appears to be no difference in pre-task and post-experimental scores when IT specialists are spatially distant (mean = 0.02, std. error = 0.18, Panel A of Table 5). A Bonferroni comparison of the estimated marginal means of the credibility difference score for the IT specialist that is not spatially distant and the IT specialist that is spatially distant reveals a statistically significant difference (EMM difference = 0.56, one-tailed *p*-value 0.011, 95% Wald CI: [0.08, 1.04], Panel C of Table 5).

These results suggest that after participants in the in-house IT specialist condition became fully aware of their manipulations, they adjusted their credibility assessments upward by an average of 0.6 points on a 10-point Likert scale. However, after participants in the outsourced IT specialist condition became fully aware of their manipulations, they did not appear to adjust their

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[23] Levene's test of equality of error variances indicates that estimated marginal means of the IT specialist credibility difference score exhibit homogeneity of variance across conditions when participant firm size and perceptions of participant auditor type are included as covariates (*F*-statistic = 0.767, *p*-value = 0.517, untabulated). Visual examination of histograms of the IT specialist credibility difference score dependent variable indicates that the assumption of normality is satisfied across conditions. Furthermore, the covariate included in the model is uncorrelated with and does not interact with the independent variables, satisfying conditions for an effective *ANCOVA*.

Table 5: Difference Scores of IT Specialist Credibility by Condition

Panel A: IT Specialist Credibility Difference Scores, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	Cell 1 0.50 (0.24) n = 16	Cell 3 -0.22 (0.26) n = 14	0.14 (0.17) n = 30
	Overlapping	Cell 2 0.66 (0.25) n = 15	Cell 4 0.26 (0.25) n = 15	0.46 (0.17) n = 30
		0.58 (0.17) n = 31	0.02 (0.18) n = 29	0.30 (0.12) n = 60

Panel B: *ANCOVA* Model IT Specialist Credibility Difference Scores

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	11.864	5	2.664	0.032
Spatial Distance	4.266	1	4.790	0.033
Domain Knowledge Distinctiveness	1.505	1	1.690	0.199
Spatial Distance × Domain Knowledge Dist.	0.380	1	0.427	0.516
Firm size	2.531	1	2.842	0.098
Auditor Type	3.761	1	4.223	0.045
Error	48.090	54		

$R^2 = 0.198$; Adjusted $R^2 = 0.124$

Panel C: Bonferroni Comparison of IT Specialist Credibility Difference Scores

Comparisons (EMM Diff. [Std. Error])	95% Wald CI	Hypothesis	*p*-value*
(Cells 1+2)/2 vs. (Cells 3+4)/2 (0.56 [0.244])	0.08, 1.04	NA	0.021

Assessments of IT specialist credibility is an average measure of five items measuring the IT specialist's strength of control testing, accuracy of control risk assessments, workpaper reliability, source credibility, and trustworthiness with respect to preparing the control testing and risk assessment workpaper. The items were measured on a 10-point Likert scale varying from low to high on the aforementioned attributes. The five items were captured after exposure to the manipulation but before the audit planning task as well as in the post-experimental questionnaire when participants were reminded of their manipulations. The difference score reflects the difference between the post-experimental average credibility measure and the pre-task average credibility measure.

Covariates included in the model include participants' firm size and participants' perceptions about what type of auditor they are (ranging from "1-Financial Auditor" to "5-IT Auditor").

*The *p*-value in Panel C is the Bonferroni two-tailed *p*-value adjusted for the all pairwise comparisons. It is directly comparable to alpha of 0.05.

credibility assessments.[24] Consequently, conscious awareness of social similarity with the IT specialist in terms of spatial distance (i.e., same office location of the IT specialist) results in more favorable assessments of IT specialist credibility than when social similarity with the IT specialist in terms of spatial distance is operating at a subconscious level. This finding appears to have implications for theory on social identification as it reflects a desire for financial auditors to display an in-group bias towards IT specialists in their own office when they are fully aware that the IT specialist is part of the same office. Alternatively, financial auditors don't appear to need to adjust their credibility assessments for IT specialists that are outsourced from other offices.

6.1.2 Paid-Advice Perceptions

In order to ensure that participants' audit planning decisions were being driven by the dimensions of social similarity manipulated in this study and not by perceptions of cost of the IT specialist, paid-advice perceptions were captured. In the post-experimental questionnaire, participants were asked to respond to the following question: "Relative to the average cost of employing a staff auditor, **how costly** do you believe it was to employ **D.J. Richards** to the engagement for the purpose of testing controls and performing control risk assessments?" Responses were captured using an 11-point Likert scale ranging from "1-Much Less Costly" to "6-Equally Costly" to "11-Much More Costly." This paid-advice perception is uncorrelated with any of dependent variables in this study.

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[24] Closer examination of the estimated marginal means for participants in the spatial distance present condition (Panel A of Table 5) illustrate that participants in the distinct domain knowledge condition reduced their credibility assessments slightly (estimated marginal mean = -0.22, std. error = 0.26), while those in the overlapping domain knowledge condition increased their credibility assessments slightly (estimated marginal mean = 0.26, std. error = 0.25), resulting in an estimated marginal mean that approximates zero for all participants in the spatial distance present condition.

I conduct an *ANCOVA* on the paid-advice dependent variable, controlling for participants' level of motivation to determine whether there are differences across groups (Global *F*-statistic = 3.479, *p*-value = 0.013, untabulated).[25] The *ANCOVA* reveals a statistically significant main effect of domain knowledge distinctiveness (*F*-statistic = 6.535, *p*-value = 0.013, untabulated). Interestingly, the pattern of estimated marginal means suggests that IT specialists with distinct domain knowledge (i.e., CISA) are perceived to be more costly (8.55 on the 11-point scale) than IT specialists with overlapping domain knowledge (i.e., CISA-CPA) (7.46 on the 11-point scale). This result is counterintuitive since one would expect an individual to be paid a premium for possessing more professional designations. Perhaps this reflects participants' beliefs that IT specialists with distinct domain knowledge are true domain experts.

6.1.3 Perceived Exclusivity of the CPA Profession

In some cases, the individual perceives particular aspects of social identity to be scarce resources (Harrison 1999). For example, a financial auditor possessing a CPA designation may view this professional designation to be a scarce resource in that it should be protected from appropriation by others such as IT specialists so that the inherent value of possessing a CPA is not diminished. The more exclusive a group, the more concerned its members are likely to be with restricting the reproduction of its group identity (Harrison 1999). In order to ensure that differences in perceptions of CPA profession exclusivity do not drive my results, I made sure to include items in my post-experimental questionnaire aimed at measuring this construct.

Eight items were gathered in an attempt to measure the latent construct of perceived exclusivity of the CPA profession. Participants were told to "Imagine that you have recently

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[25] Levene's test of equality of error variances indicates that the number of planned procedures dependent variable satisfies the assumption of homogeneity of variance (*F*-statistic = 0.710, *p*-value = 0.550, untabulated). The covariate included in the model is uncorrelated with the independent variables and does not interact with the independent variables of interest, satisfying conditions for an effective *ANCOVA*.

been **licensed** as a **CPA (Certified Public Accountant)** after completing the 150 credit hour requirement as well as the 1 year full-time work experience requirement." They were then instructed to indicate their level of agreement (8-point Likert scale ranging from 1-Strongly Disagree to 2-Strongly Agree) with the eight statements found in Figure 6. The order of the eight statements was randomized. Principal component analysis was used to extract constructs based on responses on these eight items. Results indicate that the three items in Figure 6 that have asterisks next to them (4, 6, and 8) load onto one construct, which appears to reflect perceptions of exclusivity of the CPA profession. The Cronbach's alpha for these three items measuring exclusivity is 0.866, indicating good internal consistency. Since the three items appear to measure my construct of interest, I average the three exclusivity items to form one measure of participants' perceptions of CPA profession exclusivity.

Eight Items Gathered to Measure Exclusivity of the CPA Profession

1. The public accounting profession should make it **easier** for future applicants to obtain a CPA professional designation.

2. The 150 credit hour education requirement ensures that members of the CPA profession possess the **minimum knowledge necessary**.

3. The work experience requirement of 1 year of full-time work or 2 years of part-time work ensures that members of the CPA profession possess the **minimum experience necessary.**

* 4. Members of the CPA profession form part of an **exclusive** group of individuals.

5. **Anyone** should be permitted to become a member of the CPA profession.

* 6. The CPA profession is a **prestigious** group of individuals.

7. Individuals from **other disciplines** (besides accounting) should be permitted to become members of the CPA profession.

* 8. Strict licensure requirements ensures that the public will continue to view members of the CPA profession as **credible** and **trustworthy**.

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* Items that loaded onto the same construct when principal components analysis was performed on the eight items. Cronbach's alpha for items 4, 6, and 8 = 0.866.

Figure 6: Measures of CPA Profession Exclusivity

Perceptions of CPA profession exclusivity do not differ statistically across conditions and the measure is not a significant covariate in any of my models. Overall, evidence suggests that the auditor participants in my study view the CPA profession as a highly exclusive group, as reflected by a mean of 6.5 (std. dev. = 1.38) on an 8-point Likert scale ranging from "1-Strongly Disagree" to "8-Strongly Agree" in terms of statements reflecting exclusivity.

6.1.4 Perceptions of Dilution of Additional Designations

In order to measure whether participants perceive individuals with two designations as being less of an expert than those possessing only one designation in their domain of expertise, participants were asked to "consider a situation in which an individual possesses **two professional designations:** one **in** his/her field of expertise and one in an area **outside** his/her field of expertise." Auditor participants responded to several statements meant to capture their beliefs about the value of more than one professional designation by indicating their level of agreement with the statements found in Figure 7 using an 8-point Likert scale ranging from "1-Strongly Disagree" to "8-Strongly Agree."

Three Items Gathered to Measure Perceptions of Dilution of Additional Designations

1. No one can be an expert in multiple fields. By having two professional designations, this individual is a "jack of all trades" and not an expert in his/her field.
2. The more professional designations a person has, the more intelligent and competent that individual is. By having two professional designations, this individual is an expert in multiple fields.
3. A second professional designation does not have any meaningful effect on a person's competence. Having two professional designations in no way affects this individual's competence.

Items were measured using an 8-point Likert scale ranging from "1-Strongly Disagree" to "8-Strongly Agree."

Figure 7: Measures of Perceptions of Dilution of Additional Designations

63

The first item in Figure 7 is a measure intended to capture participants' perceptions of how strongly they believe that an individual's expertise is diluted when additional knowledge is acquired in another domain. The second item is intended to gauge participants' agreement with the notion that additional designations reflect additional expertise. The last item measures participants' agreement with the belief that additional designations have no impact on an individual's competence.

A *MANOVA* revealed no statistically significant differences in these measures across conditions (all omnibus test statistics non-significant at alpha-level of 0.05, untabulated).[26] The mean (standard deviation) of agreement with the first statement is 2.48 (1.672) out of 8, suggesting that participants disagree with the idea of additional professional designations diluting expertise. The mean (standard deviation) agreement with the second statement is 4.07 (2.074), suggesting that participants agree more with the notion of additional designations reflecting additional expertise than the idea that additional designations dilute expertise (paired-samples t-statistic = 4.219, two-tailed p-value < 0.001, 95% CI: [0.83, 2.33], untabulated). However, a mean of 4.07 on an 8-point Likert scale indicates neither agreeing nor disagreeing with the statement (neutrality). Finally, mean agreement with the third statement indicating additional designations have no effect on competence was 3.43 (std. dev. = 2.11), which is more agreement than the first jack-of-all trades statement (paired samples t-statistic = 3.541, two-tailed p-value = 0.001, 95% CI: [0.413, 1.487], untabulated). However, there is no statistical difference in agreement between the statement indicating additional professional designations reflect more

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[26] Box's test of equality of covariance matrices indicates that the covariance matrices of the dependent variables across groups is equal (Box's M,= 18.403, F-statistic = 0.922, p-value = 0.552, untabulated). Because the Shapiro-Wilk's test of normality indicates a violation of multivariate normality, I also conduct the Levene's test of equality of error variances on the three items, which indicate that all three items satisfy the assumption of homogeneity of variance across conditions (p-values > 0.05, untabulated).

intelligence/competence and the statement indicating additional designations have no effect on competence (paired samples *t*-statistic = 1.391, two-tailed *p*-value = 0.169, 95% CI: [-0.278, 1.544], untabulated).

Overall, participants appear to disagree with the idea of additional designations reflecting a dilution of expertise and exhibit neutrality in opinions about designations reflecting more or less knowledge. Perhaps participants believe that there is more to expertise and competence than professional designations.

6.2 Effect of Domain Knowledge Distinctiveness and Spatial Distance on the Nature, Staffing, Timing and Extent of Planned Procedures

This section probes deeper into auditor reliance decisions by describing how the nature, staffing, timing, and extent of audit planning differs when domain knowledge distinctiveness and spatial distance of the IT specialist is manipulated. All measures of these different types of scope decisions are measured consistent with Brazel and Agoglia (2007). Descriptions of the measures of these scope dependent variables can be found in the sections that follow.

In order to determine whether there are differences in the audit scope dependent variables (i.e., nature, staffing, timing, and extent) across conditions in my study, I conduct a *MANCOVA* controlling for participants' possession of a college degree with an IS minor, number of months of planning experience, motivation, perceived IT specialist expertise in terms of IT control risk assessments, and participants' perceptions of the overall reliability of controls based on the IT specialist's control testing and risk assessment workpaper. The omnibus tests for a fully crossed model including the independent variables of domain knowledge distinctiveness and spatial distance as well as the covariates listed above reveal a statistically significant interaction of domain knowledge distinctiveness and spatial distance (*F*-statistic = 2.857, *p*-value = 0.033,

untabulated), indicating that there are differences in audit scope decisions across conditions.[27]

Since the *MANCOVA* reveals statistically significant differences across groups, I examine

*ANCOVA*s for each of the scope dependent variables in the following sections.

6.2.1 Nature of Planned Audit Procedures

The nature of participants' scope decisions is measured as the total number of procedures

planned. The mean (standard deviation) number of audit procedures planned by participants in

the study is 11.97 (1.922). The original number of procedures planned in the prior year audit

budget was 12. Thus, a one-sample *t*-test reveals that there is no difference in the number of

audit procedures planned by participants relative to the prior year's number of audit procedures

planned (*t*-statistic = -0.134, two-tailed *p*-value = 0.894, 95% CI: [-0.530, 0.463], untabulated).

Next, I perform an *ANCOVA* on participants' scope decisions related to the nature of

procedures to be performed (i.e., the number of audit procedures planned by participants),

controlling for whether participants earned a college degree with an IS minor and for

participants' planning experience in months (Global *F*-statistic = 3.505, *p*-value = 0.008, Panel B

of Table 6).[28] Estimated marginal means of participants' nature decisions are depicted in Figure

8 and tabulated in Panel A of Table 6.

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[27] Box's test of equality of covariance matrices indicates that the covariance matrices of the dependent variables across groups are not equal (Box's $M,=$ 67.217, *F*-statistic = 1.945, *p*-value = 0.001, untabulated). Since Box's test is sensitive to violations of normality and the Shapiro-Wilk's test of normality indicates violations to the multivariate normality assumption, I also conduct the Levene's test of equality of error variances on the four dependent variables. Levene's tests indicate that all four items satisfy the assumption of homogeneity of variance across conditions (*p*-values > 0.05, untabulated). Furthermore, visual examination of histograms of the dependent variable measures by condition indicates there are only slight departures from normality.

[28] Levene's test of equality of error variances indicates that the number of planned procedures dependent variable satisfies the assumption of homogeneity of variance (*F*-statistic = 0.334, *p*-value = 0.801, untabulated). Covariates included in the model are uncorrelated with the independent variables. While participants' possession of a college degree with an IS minor does not interact with the IVs of interest, there is a three-way interaction among audit planning experience, domain knowledge distinctiveness, and spatial distance (*F*-statistic = 13.939, *p*-value = <0.001, untabulated), failing to satisfy all conditions for an effective *ANCOVA*. When interactions of audit planning experience interactions and the IVs are included in the model, the spatial distance main effect disappears (*F*-statistic

ANCOVA results are tabulated in Panel B of Table 6. Results reveal a statistically significant main effect of spatial distance on participants' nature decisions (*F*-statistic = 4.351, *p*-value = 0.042), such that auditor participants planned, on average, approximately one additional
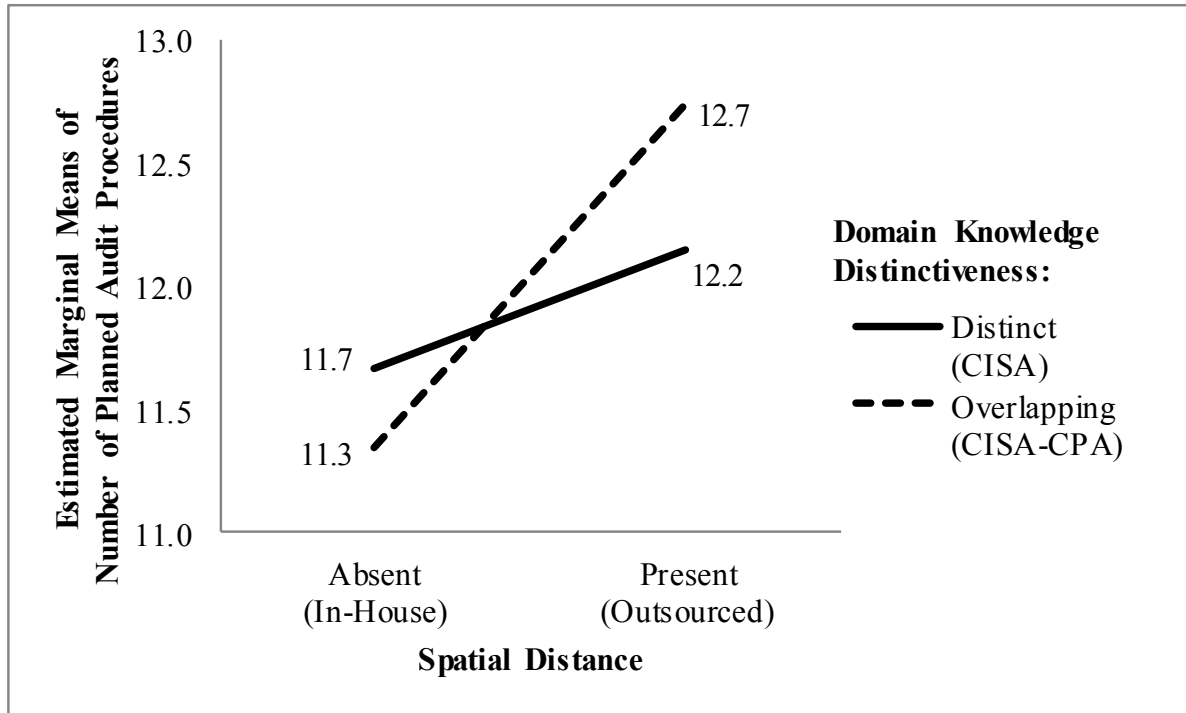
Figure 8: Nature Audit Scope Decisions

procedure when the IT specialist was spatially distant (EMM difference = 0.94, std. error difference = 0.428, Bonferroni *p*-value = 0.028, 95% Wald CI: [0.10, 1.78], untabulated). Hence, it appears that auditors' nature decisions are more responsive to the control risk assessments of spatially distant IT specialists.

6.2.2 Staffing of Planned Audit Procedures

The staffing of participants' scope decisions is measured as the number of procedures assigned to a more senior-level auditor than a staff-assistant. The mean (standard deviation)

= 2.770, *p*-value = 0.102, untabulated) and the interaction of domain knowledge distinctiveness and spatial distance becomes marginally statistically significant (*F*-statistic = 2.873, *p*-value 0.096, untabulated).

Table 6: Nature Audit Scope Decisions by Condition

Panel A: Number of Planned Audit Procedures, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	11.66 (0.14) n = 16	12.15 (0.47) n = 14	11.91 (0.32) n = 30
	Overlapping	11.35 (0.45) n = 15	12.74 (0.45) n = 15	12.04 (0.32) n = 30
		11.50 (0.31) n = 31	12.45 (0.32) n = 29	11.98 (0.23) n = 60

Panel B: *ANCOVA* Model of Number of Planned Audit Procedures

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	53.393	5	3.505	0.008
Spatial Distance	13.258	1	4.351	0.042
Domain Knowledge Distinctiveness	0.268	1	0.088	0.768
Spatial Distance × Domain Knowledge Dist.	3.081	1	1.011	0.319
IS Minor	19.816	1	6.503	0.014
Audit Planning Experience	17.661	1	5.796	0.020
Error	164.540	54		

$R^2 = 0.245$; Adjusted $R^2 = 0.175$

The number of planned audit procedures dependent variable is calculated as the total number of procedures planned by the participant in response to the IT specialist's control testing and risk assessment workpaper.
Covariates included in the model include a variable capturing whether participant's acquired a college degree with an IS minor and participants' audit planning experience in months.

number of audit procedures planned by participants to be performed by more senior level staff is

3.22 (3.031). None of the original procedures planned in the prior year audit budget were

68

assigned to a level of staff higher than staff-assistant. A one-sample *t*-test reveals that there is a statistically significant difference in the number of procedures staffed with more senior-level staff relative to the prior year (*t*-statistic = 8.219, two-tailed *p*-value <0.001, 95% CI: [2.434, 4.000], untabulated).

Next, I perform an *ANCOVA* on participants' staffing scope decisions (i.e., the number of audit procedures planned to be performed by more senior audit staff), controlling for participants' planning experience in months, motivation, and perceived IT specialist expertise in terms of IT control risk assessments (Global *F*-statistic = 5.479, *p*-value <0.001, Panel B of Table 7).[29] Estimated marginal means of participants' staffing decisions are depicted in Figure 9 and tabulated in Panel A of Table 7.

ANCOVA results are tabulated in Panel B of Table 7. Results reveal no statistically significant main effect or interaction of domain knowledge distinctiveness and spatial distance on participants' staffing decisions. Hence, it appears that auditors' staffing decisions are unaffected by the domain knowledge distinctiveness and spatial distance of the IT specialist.

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[29] Levene's test of equality of error variances indicates that the number of more senior staff procedures dependent variable satisfies the assumption of homogeneity of variance (*F*-statistic = 0.384, *p*-value = 0.765, untabulated). Covariates included in the model are uncorrelated with the independent variables. While participants' motivation and perception of IT specialist expertise does not interact with the IVs of interest, there is a three-way interaction among audit planning experience, domain knowledge distinctiveness, and spatial distance (*F*-statistic = 7.196, *p*-value = 0.01, untabulated), failing to satisfy all conditions for an effective *ANCOVA*. When interactions of audit planning experience interactions and the IVs are included in the model, the spatial distance becomes marginally statistically significant (*F*-statistic = 3.647, *p*-value = 0.062, untabulated) and the interaction of domain knowledge distinctiveness and spatial distance becomes marginally statistically significant (*F*-statistic = 2.918, *p*-value 0.094, untabulated).

Table 7: Staffing Audit Scope Decisions by Condition

Panel A: Number of More Senior Staff Procedures, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	3.05 (0.63) n = 16	3.73 (0.67) n = 14	3.39 (0.46) n = 30
	Overlapping	2.66 (0.65) n = 15	3.48 (0.66) n = 15	3.07 (0.46) n = 30
		2.85 (0.45) n = 31	3.60 (0.47) n = 29	3.23 (0.33) n = 60

Panel B: *ANCOVA* Model of Number of More Senior Staff Procedures

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	207.546	6	5.479	<0.001
Spatial Distance	8.292	1	1.313	0.257
Domain Knowledge Distinctiveness	1.567	1	0.248	0.620
Spatial Distance × Domain Knowledge Dist.	0.075	1	0.012	0.914
Audit Planning Experience	154.917	1	24.536	<0.001
Motivation	52.036	1	8.242	0.006
IT Specialist Expertise	19.143	1	3.032	0.087
Error	334.637	53		

$R^2 = 0.383$; Adjusted $R^2 = 0.313$

The number of more senior staff procedures dependent variable is calculated as the total number of procedures planned by the participant to be performed by a more senior level staff than staff-assistant in response to the IT specialist's control testing and risk assessment workpaper.

Covariates included in the model include participants' audit planning experience in months, motivation (measured on a 9-point Likert scale ranging from "1-Very Low" to "9-Very High"), and perceived IT specialist expertise in terms of performing IT control risk assessments (measured on an 7-point Likert scale ranging from "1-Low Level of Expertise" to "4-Moderate Level of Expertise" to "7-High Level of Expertise").
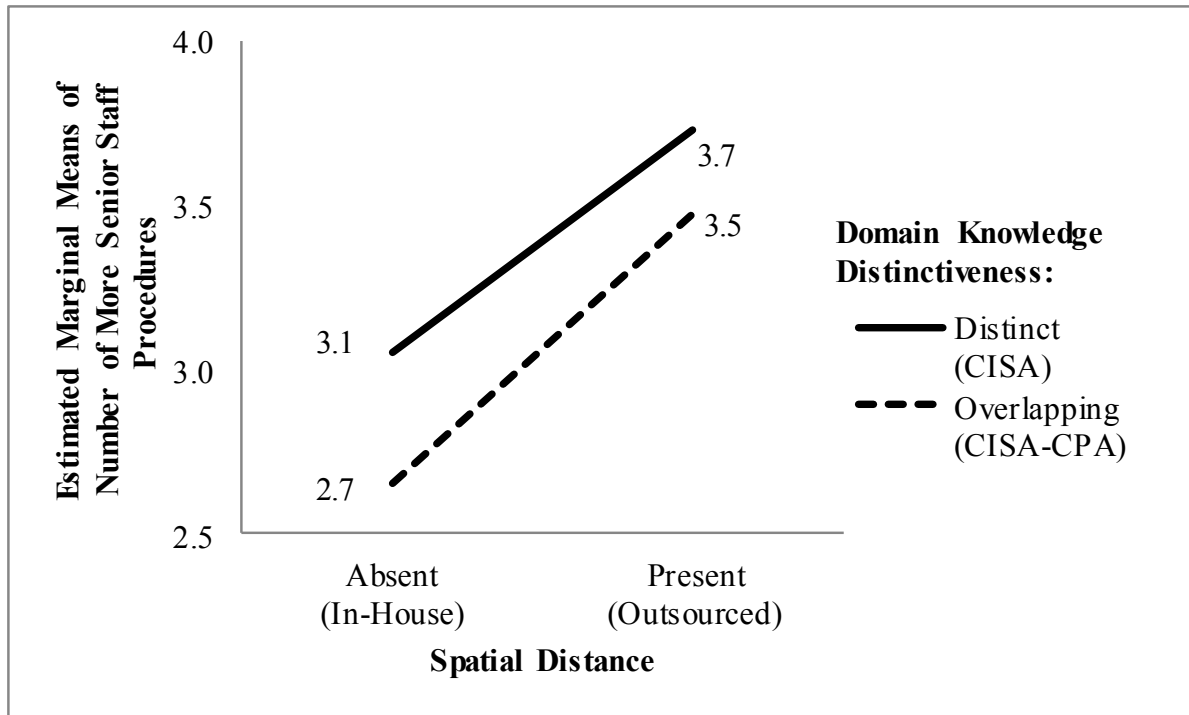
Figure 9: Staffing Audit Scope Decisions

6.2.3 Timing of Planned Audit Procedures

The timing of participants' scope decisions is measured as the total number of testing hours budgeted at fiscal year-end (versus interim). The mean (standard deviation) number of testing hours scheduled by participants to be conducted at year-end is 54.05 (33.92). The original number of hours planned to be performed at year-end in the prior year budget was 15. A one-sample *t*-test reveals that there is a statistically significant difference in the number of testing hours scheduled by participants to be performed at year-end relative to the prior year budget (*t*-statistic = 8.917, two-tailed *p*-value <0.001, 95% CI: [30.287, 47.813],untabulated).

Next, I perform an *ANCOVA* on participants' timing scope decisions (i.e., the number of hours budgeted to be performed at year-end), controlling for participants' planning experience in months, motivation, perceived IT specialist expertise in terms of IT control risk assessments, and perceived overall reliability of controls based on the IT specialist's control risk assessment

71

(Global F-statistic = 3.457, p-value = 0.004, Panel B of Table 8).[30] Estimated marginal means of participants' timing decisions are depicted in Figure 10 and tabulated in Panel A of Table 8.

ANCOVA results are tabulated in Panel B of Table 8. Results reveal a marginally statistically significant main effect of spatial distance on participants' nature decisions (F-statistic = 3.173, p-value = 0.081), such that auditor participants budgeted more year-end hours when the IT specialist was spatially distant compared to when the IT specialist was not spatially
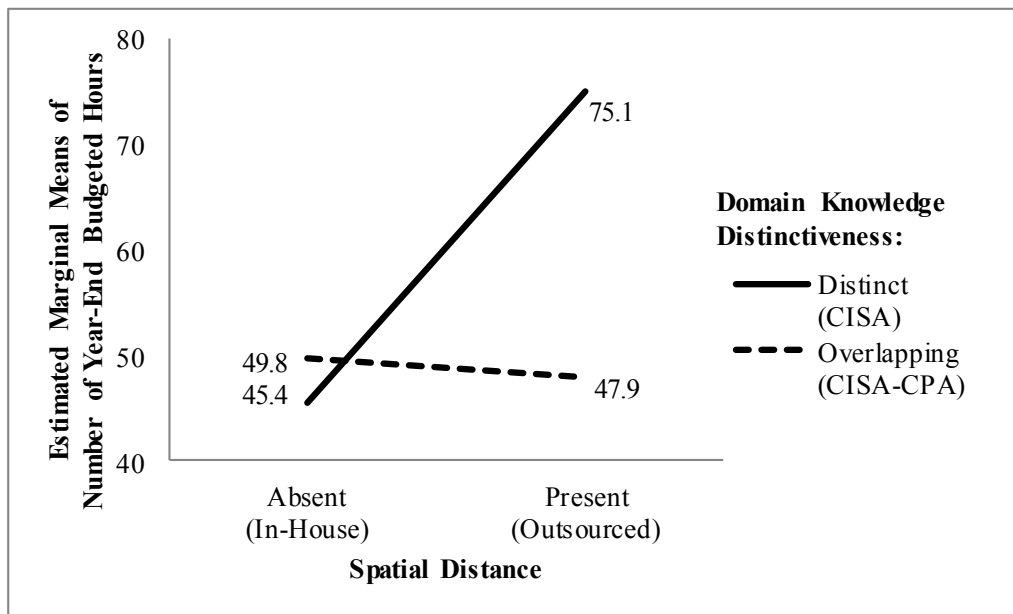
Figure 10: Timing Audit Scope Decisions

distant. Hence, it appears that auditors' timing decisions are more responsive to the control risk assessments of spatially distant IT specialists. However, the presence of a statistically significant interaction of domain knowledge distinctiveness and spatial distance (F-statistic = 4.124, p-value = 0.047) suggests that the aforementioned main effect may be driven by one of the conditions. Indeed, as can be seen in Figure 10, auditors planned approximately 25 hours more when the IT

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[30] Levene's test of equality of error variances indicates that the number of number of year-end budgeted hours dependent variable satisfies the assumption of homogeneity of variance (F-statistic = 1.703, p-value = 0.177, untabulated). The Shapiro-Wilk's test of normality indicates that the dependent variable is normally distributed across all conditions. Covariates included in the model are uncorrelated with the independent variables and do not interact with the IVs of interest, satisfying conditions for an effective *ANCOVA*.

Table 8: Timing Audit Scope Decisions by Condition

Panel A: Number of Year-End Budgeted Hours, Estimated Marginal Mean (Standard Error)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	Cell 1 45.45 (7.48) n = 16	Cell 3 75.10 (8.02) n = 14	60.27 (5.48) n = 30
	Overlapping	Cell 2 49.78 (7.73) n = 15	Cell 4 47.85 (7.79) n = 15	48.82 (5.46) n = 30
		47.61 (5.39) n = 31	61.48 (5.57) n = 29	54.54 (3.86) n = 60

Panel B: *ANCOVA* Model of Number of Year-End Budgeted Hours

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	21559.457	7	3.457	0.004
Spatial Distance	2827.341	1	3.173	0.081
Domain Knowledge Distinctiveness	1947.278	1	2.186	0.145
Spatial Distance × Domain Knowledge Dist.	3674.460	1	4.124	0.047
Audit Planning Experience	2600.610	1	2.919	0.094
Motivation	6616.329	1	7.426	0.009
IT Specialist Expertise	4048.341	1	4.544	0.038
Reliability of Controls	6022.611	1	6.759	0.012
Error	46331.393	52		

R^2 = 0.318; Adjusted R^2 = 0.226

Panel C: Bonferroni Comparisons of Number of Year-End Budgeted Hours

Comparisons (EMM Diff. [Std. Error])	95% Wald CI	Hypothesis	*p*-value*
Cell 1 vs. Cell 2 (-4.33 [9.996])	-30.71, 22.04	NA	1.000
Cell 1 vs. Cell 3 (-29.66 [10.226])	-56.63, -2.68	NA	0.022
Cell 1 vs. Cell 4 (-2.40 [10.089])	-29.02, 24.21	NA	1.000
Cell 2 vs. Cell 3 (-25.32, [10.360])	-52.66, 2.01	NA	0.087
Cell 2 vs. Cell 4 (1.92, [10.259])	-25.14, 28.99	NA	1.000
Cell 3 vs. Cell 4 (27.25, [10.442])	-0.30, 54.80	NA	0.054

The number of year-end budgeted hours dependent variable is calculated as the total number of budgeted hours scheduled by the participant to be performed at year-end (as opposed to at interim) in response to the IT specialist's control testing and risk assessment workpaper.

Covariates included in the model include participants' audit planning experience in months, motivation (measured on a 9-point Likert scale ranging from "1-Very Low" to "9-Very High"), perceived IT specialist expertise in terms of performing IT control risk assessments (measured on an 7-point Likert scale ranging from "1-Low Level of Expertise" to "4-Moderate Level of Expertise" to "7-High Level of Expertise"), and perceived overall reliability of controls based on the IT specialist's control risk assessment (measured on an 11-point Likert scale ranging from "1-Very Unreliable" to "11-Very Reliable").

* The *p*-value in Panel C is the Bonferroni two-tailed *p*-value adjusted for the all pairwise comparisons. It is directly comparable to alpha of 0.05.

specialist had distinct domain knowledge and was spatially distant relative to all the other conditions. The Bonferroni comparisons found in Panel C of Table 8 provide additional support that the condition in which the IT specialist is spatially distant and possesses distinct domain knowledge (Cell 3) is the main driver of differences detected by the *ANCOVA*. Thus, the significant interaction suggests that the auditor's timing scope decisions are most influenced when the IT specialist is socially dissimilar from the auditor on two dimensions: domain knowledge distinctiveness and spatial distance.

6.2.4 Extent of Planned Audit Procedures

The extent of participants' scope decisions is measured as the total number of audit hours budgeted for the current year's audit plan. The mean (standard deviation) total number of audit hours planned by participants is 100.93 (28.413). The original number of budgeted hours in the prior year was 93. A one- sample *t*-test reveals that there is a statistically significant difference in the total number of hours budgeted by participants relative to the prior year's total audit hours budgeted (*t*-statistic = 2.163, two-tailed *p*-value = 0.035, 95% CI: [0.594, 15.273], untabulated).

Next, I conduct an *ANOVA* on participants' extent scope decisions (i.e., the number of hours budgeted to be performed) (Global *F*-statistic = 3.892, *p*-value = 0.003, Panel B of Table 9).[31] Mean nature decisions are depicted in Figure 11 and tabulated in Panel A of Table 9.

ANOVA results are tabulated in Panel B of Table 9. Results reveal a statistically significant main effect of spatial distance on participants' nature decisions (*F*-statistic = 5.147, *p*-value = 0.027), such that participants budgeted more hours when the IT specialist was spatially

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[31] No covariates were included in the model because none were correlated with the number of budgeted hours dependent variable. Levene's test of equality of error variances indicates that the number of budgeted hours dependent variable satisfies the assumption of homogeneity of variance (*F*-statistic = 0.798, *p*-value = 0.500, untabulated). The Shapiro-Wilk's test of normality indicates that the dependent variable is normally distributed across all conditions.
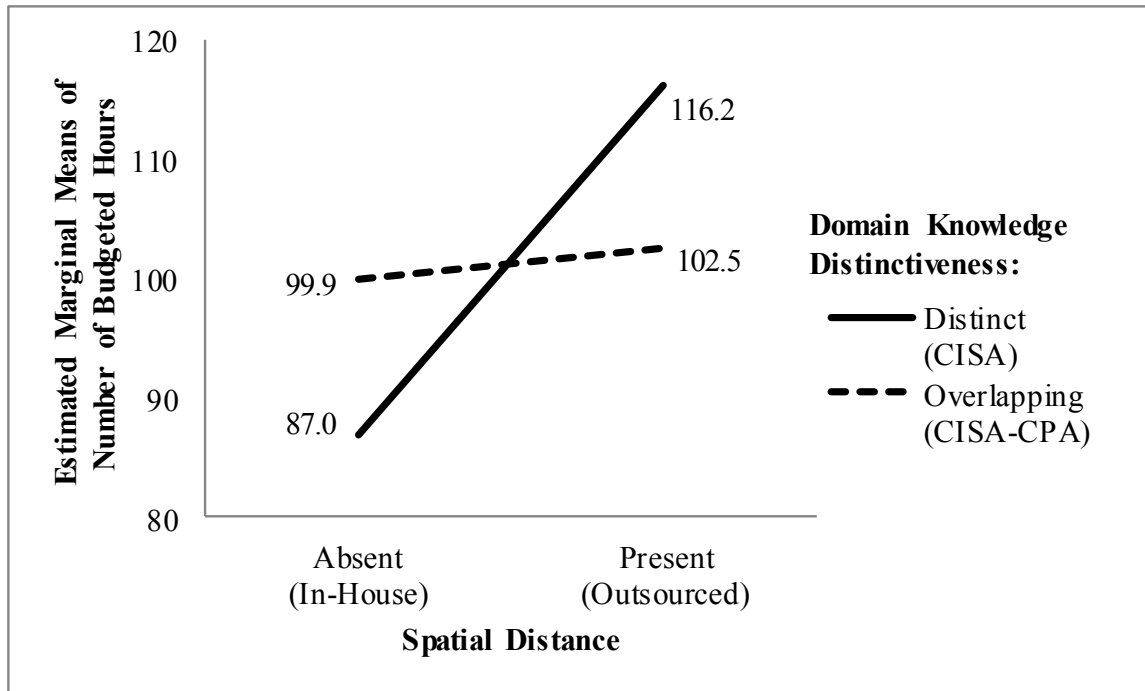
Figure 11: Extent Scope Decisions

distant than when there was no spatial distance. Hence, it appears that auditors' extent scope decisions are more responsive to the control risk assessments of spatially distant IT specialists.

However, the presence of a marginally statistically significant interaction of domain knowledge distinctiveness and spatial distance (*F*-statistic = 3.602, *p*-value = 0.063) suggests that the aforementioned main effect may be driven by one of the factors. Indeed, as can be seen in Figure 11, auditors' extent scope decisions do not differ in terms of spatial distance when the IT specialist has overlapping domain knowledge relative to the auditor (independent samples *t*-statistic = -0.252, two-tailed *p*-value = 0.803, 95% CI: [-23.71, 18.51], untabulated). However, when the IT specialist has distinct knowledge relative to the auditor, the auditor appears to be more affected by the presence of spatial distance, planning more hours (mean difference = 29.21, std. error difference = 9.509) when spatial distance is present (independent samples *t*-statistic = 3.072, two-tailed *p*-value = 0.005, 95% CI: [9.74, 48.69], untabulated). Thus, the marginally statistically significant interaction suggests that the auditor's extent scope decisions are most

75

Table 9: Extent Scope Decisions by Condition

Panel A: Number of Budgeted Hours, Mean (Standard Deviation)

		Spatial Distance		
		Absent (In-House)	Present (Outsourced)	
Domain Knowledge Distinctiveness	Distinct	87.00 (19.78) n = 16	116.21 (31.66) n = 14	100.63 (29.52) n = 30
	Overlapping	99.93 (30.28) n = 15	102.53 (26.00) n = 15	101.23 (27.76) n = 30
		93.26 (25.82) n = 31	109.14 (29.19) n = 29	100.93 (28.41) n = 60

Panel B: *ANOVA* Model of Number of Budgeted Hours

Sources of Variation	Type III SS	df	*F*-statistic	*p*-value
Model	6428.710	3	2.913	0.042
Spatial Distance	3787.105	1	5.147	0.027
Domain Knowledge Distinctiveness	2.091	1	0.003	0.958
Spatial Distance × Domain Knowledge Dist.	2650.285	1	3.602	0.063
Error	41201.024	56		

$R^2 = 0.135$; Adjusted $R^2 = 0.089$

The number of budgeted hours dependent variable is calculated as the total number of budgeted hours scheduled by the participant to be performed for the audit engagement in response to the IT specialist's control testing and risk assessment workpaper.

influenced by spatial distance when the IT specialist is socially dissimilar to the auditor in terms of domain knowledge.

7. DISCUSSION

Figure 12 provides a summary of the results of the tests of my hypotheses as well as references to the corresponding tables and figures.

Hypotheses	Theory - Effect	Result	Tests
H1: In the absence of spatial distance relative to the IT specialist, financial auditors place greater reliance on IT specialists possessing overlapping domain knowledge than IT specialists possessing distinct domain knowledge.	SIT - In-Group Bias	Not Supported*	Table 2
H2: Financial auditors rely more on spatially distant IT specialists within the firm than IT specialists that are not spatially distant.	SNT - Power of Weak Ties	Supported	Table 2
H3: When the IT specialist is spatially distant relative to the financial auditor, financial auditors will rely more on the IT specialists possessing distinct domain knowledge than IT specialists possessing overlapping domain knowledge.	JAS - Preference for Dissimilar	Marginally Supported	Table 2
H4a: Financial auditors' assessments of competence will be higher for IT specialists possessing overlapping domain knowledge than for IT specialists possessing distinct domain knowledge.	Social Desirability Bias	Supported	Table 3
H4b: Financial auditors' assessments of competence will not be positively associated with actual reliance on the IT specialist.	Social Desirability Bias	Supported	Table 4
H5: Inconsistencies in financial auditor judgments of IT specialist competence and financial auditor reliance decisions will be suppressed by the extent of financial auditor identification with the IT specialist.	SIT - In-Group Bias	Supported	Figure 5

* Approaches marginal support with p-value = 0.1025. Lack of support likely due to small sample size and lack of power.

Figure 12: Summary of Results

7.1 Financial Auditors' Reliance on the IT Specialist

The effect of the IT specialist's domain knowledge distinctiveness on financial auditors' reliance on the IT specialist depends on whether spatial distance between the IT specialist and financial auditor is present (different office location) or absent (same office location). With a small sample of auditor participants, I find a pattern of results supportive of H1, such that financial auditors rely on IT specialists that are in-house more when the IT specialist is socially similar in terms of domain knowledge (i.e., possesses overlapping domain knowledge instead of

77

distinct domain knowledge). Conversely, the pattern of results demonstrate that financial auditors rely on IT specialists that are outsourced more when the IT specialist is socially dissimilar in terms domain knowledge (i.e., possesses distinct domain knowledge instead of overlapping domain knowledge), supportive of H3. The pairwise comparison testing H1 detects an effect that approaches marginal statistical significance, while the pairwise comparison testing H3 detects an effect that is marginally statistically significant. Failure to detect statistical significance at the 0.05 level is likely due to my small sample size and the resulting low power of my tests. Next, I discuss my findings in terms of the *ANCOVA* and pairwise comparisons, after which, I discuss my findings from the post-hoc comparisons conducted.

According to my statistical tests, though approaching marginal significance, when IT specialists are brought onto the engagement from the same office, financial auditors, contrary to H1, do not appear to exhibit an in-group bias for IT specialists that have overlapping domain knowledge (i.e., a CPA designation) as reliance does not differ statistically significantly for CISA-CPA IT specialists compared to CISA-only IT specialists. Additionally, I find some evidence in support of the preference for the dissimilar hypothesized in H3 as auditors appear to rely on CISA-only IT specialists marginally more than CISA-CPA IT specialists when the IT specialist is outsourced from another office within the firm.

Supporting H2, financial auditors exhibit a preference (bias) for the dissimilar in that they rely on IT specialists that are outsourced from another office within the firm more than in-house IT specialists. This "consultant effect" is driven by the differences in reliance between distinct domain knowledge IT specialists (i.e., CISAs) that are in-house versus outsourced from another office within the firm. However, there is no difference in the reliance on overlapping domain

78

knowledge IT specialists (i.e., CISA-CPAs) that are in-house versus those that are outsourced from another office within the firm.

Taken together, my findings provide evidence toward a theory of social similarity in which social similarity in terms of domain knowledge attenuates the positive effects of social dissimilarity in terms of spatial distance. That is, overlapping domain knowledge eliminates the positive increase in reliance attributed to the presence of spatial distance. A theory of social similarity that allows for the interaction of different social similarity dimensions in affecting decision-making is more descriptive than the distinct theories used to motivate the three reliance hypotheses in my study.

7.2 Financial Auditors' Assessments of IT Specialist Competence

Financial auditors are expected to provide socially acceptable responses to judgment-based questions about the IT specialist. Consistent with this notion, H4a predicts that financial auditors will assess the competence of IT specialists with overlapping domain knowledge as higher than the competence of IT specialists with distinct domain knowledge because those with overlapping domain knowledge have knowledge in an additional domain. My findings indicate that financial auditors do indeed assess the competence of IT specialists as higher when they possess both CISA and CPA designations relative to when they possess only a CISA designation.

Since social behavior often operates in a subconscious fashion (Greenwald and Banaji 1995), financial auditors' judgments about IT specialist competence are expected to be inconsistent with their reliance decisions. Consistent with H4b, financial auditors' assessments of IT specialist competence are not positively related to their reliance behaviors. Results provide support for H5, which predicts that the inconsistencies between auditors' judgments and behaviors are suppressed by the degree to which the financial auditor identifies with the IT

79

specialist. Specifically, when the financial auditor identifies more strongly with the IT specialist, the negative relation between competence judgments and reliance behaviors is attenuated because identification has a positive indirect effect on reliance.

7.3 Other Financial Auditor Perceptions

7.3.1 Perceptions of IT Specialist Credibility

While financial auditors do not assess credibility differentially for IT specialists varying in terms of domain knowledge distinctiveness and spatial distance, the changes in credibility assessments from before completing the audit planning task and after being reminded of the domain knowledge distinctiveness and spatial distance manipulations do differ. Specifically, an upward adjustment to IT specialist credibility assessments occurs when financial auditors are reminded that there is no spatial distance between the IT specialist and the financial auditor; however, no adjustment (upward or downward) to credibility assessments occurs when financial auditors are reminded that there is spatial distance between the IT specialist and financial auditor. Interestingly, this upward adjustment of credibility assessments for IT specialists that are more socially similar in terms of spatial distance suggests the presence of an in-group bias.

7.3.2 Perceptions of the Cost of the IT Specialist

Financial auditors would be expected to perceive the cost of outsourced IT specialists to be higher than in-house IT specialists because of the added cost of bringing in the outsourced IT specialist (i.e., transport costs). Furthermore, an IT specialist with more than one professional designation should be considered more costly than an IT specialist with only one professional designation since the additional designation reflects additional knowledge. Counterintuitively, however, my findings indicate that financial auditors believe that IT specialists with a single professional designation are more costly than IT specialists with two professional designations.

80

7.3.3 Perceptions of CPA Profession Exclusivity

Measures of participants' perceptions of the CPA profession were captured in order to ensure that my specific operationalization of overlapping domain knowledge as CISA-CPA was not driving results related to domain knowledge distinctiveness. In general, findings suggest that financial auditors believe the CPA profession to be highly exclusive. Perceptions of CPA profession exclusivity were not different across conditions and participants' perception of CPA profession exclusivity was not a significant covariate in any of the statistical models in my study. Thus, perceptions of CPA profession exclusivity do not drive my results.

7.3.4 Perceptions of Additional Designations Diluting Expertise

Measures of participants' perceptions of the extent to which expertise/competence is diluted with additional professional designations were captured to ensure that my specific operationalization of domain knowledge distinctiveness as either a single professional designation or two professional designations was not driven by perceptions of dilution. There were no differences across conditions in terms of perceptions of dilution and participants' perception of dilution was not a significant covariate in any of the statistical models in my study; thus, perceptions of dilution do not drive my results.

In general, findings suggest that financial auditors disagree with the notion of additional professional designations diluting expertise. However, financial auditors appear to neither agree nor disagree with the ideas that additional professional designations reflect additional expertise or reflect no additional competence. Financial auditors' belief that professional designations only reflect a small component of expertise may explain such neutral opinions about the added value of additional professional designations.

81

7.4 Financial Auditors' Scope Decisions

Financial auditor reliance on the IT specialist is examined using participants' planned quality budget hours as a proxy for actual reliance decisions. Quality budget hours are composed of several elements. In particular, audit planning scope decisions vary in terms of four components: nature, staffing, timing, and extent of procedures. My findings indicate that the nature, timing, and extent of planned audit procedures are impacted by one or both of the social similarity dimensions examined in my study. However, staffing decisions are unaffected by the social similarity dimensions examined in my study.

7.4.1 Nature of Planned Audit Procedures

The nature of planned audit procedures is affected by the social similarity dimension of spatial distance. Specifically, when the IT specialist providing the control risk assessment is spatially distant, the financial auditor plans approximately one more audit procedure than when the IT specialist is not spatially distant. Thus, financial auditors plan more procedures in response to identical control risk assessments provided by IT specialists that are spatially distant as compared to IT specialists that are not spatially distant. Consistent with overall reliance decisions, this provides evidence of a "consultant effect" on the nature of planned audit procedures.

7.4.2 Timing of Planned Audit Procedures

The timing of planned audit procedures is affected by the social similarity dimension of domain knowledge distinctiveness only when spatial distance is present. That is, when the IT specialist is outsourced from another firm office, the financial auditor budgets more year-end audit hours in response to the IT specialist with distinct domain knowledge (i.e., CISA) relative to the IT specialist with overlapping domain knowledge (i.e., CISA-CPA). Incidentally, there is

82

no difference in the timing of procedures planned in response to assessments of IT specialists that are socially similar to the financial auditor on one or both of the social similarity dimensions of domain knowledge distinctiveness and spatial distance. However, financial auditors budget more hours to be performed at year-end when the IT specialist is socially dissimilar in terms of both domain knowledge distinctiveness and spatial distance.

7.4.3 Extent of Planned Audit Procedures

Finally, consistent with overall reliance results, the effect of spatial distance between the IT specialist and the financial auditor on the extent of planned procedures (i.e., budget hours) depends on the IT specialist's domain knowledge distinctiveness relative to the financial auditor. While the extent of procedures is unaffected by spatial distance when the IT specialist possesses overlapping domain knowledge (i.e., CISA-CPA), the extent of procedures is greater in scope for IT specialists with distinct domain knowledge (i.e., CISA) when spatial distance is present (as opposed to absent). Thus, financial auditors budget the most hours in response to control risk assessments made by CISA IT specialists that are outsourced from another firm office and budget the least hours in response to control risk assessments made by in-house CISA IT specialists.

Consistent with an in-group bias, when IT specialists are in-house, financial auditors budget more hours in response to the control risk assessments of the more socially similar CISA-CPA IT specialists than less socially similar CISA IT specialists. The opposite is true for outsourced IT specialists, as financial auditors budget more hours in response to control risk assessments of CISA IT specialists than CISA-CPA IT specialists, indicating a preference for the dissimilar when spatial distance is present.

83

8. CONCLUSION

The purpose of this study is to examine how the social similarity dimensions of domain-knowledge distinctiveness and spatial distance affect financial auditors' reliance on specialists. Specifically, the setting of this study is one in which the financial auditor is relying on control testing and control risk assessments performed by an IT specialist for the purposes of audit planning. Examination of this setting is valuable due to the increased importance of the role of the IT specialist on most engagements. Given that ERP systems and complex accounting information systems have become prevalent throughout the business world, it is becoming increasingly difficult for auditors to justify excluding IT specialists from the audit engagement team, especially considering AS No. 5's increased focus on the audit of internal controls over financial reporting.

Prior literature demonstrates that financial auditors are overconfident in their own abilities to assess risks in complex IT environments (Hunton et al. 2004). Many audits include IT specialists for the purpose of testing internal controls in complex IT environments. However, to the best of my knowledge no research, with one exception, has examined financial auditor reliance on IT specialists.[32] Presumably, audit quality increases when auditors rely on the work of specialists; assuming, of course, that specialists are competent. It is for this reason that it is important to examine social similarity factors that may impact financial auditors' reliance on IT

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[32] The notable exception is Brazel and Agoglia (2007); however, Brazel and Agoglia (2007) focus on the impact of IT specialist competence on audit planning decisions related to the nature, staffing, timing, and extent of procedures. Their paper does not examine the effect of social similarity dimensions on the broader issue of overall reliance on the IT specialist.

84

specialists. Furthermore, this setting is unique in the sense that IT specialists, unlike many other types of specialists (e.g., valuation experts), work as members of the audit engagement team.

One way that audit firms differ with respect to how they are organized has to do with the location of IT specialists across the firm. Conversations with managers at Big Four and national firms indicate that some firms maintain IT specialist personnel at most office locations, while others have IT specialist "hubs" where all IT specialists are housed for outsourcing to other offices as needed. This difference in organizational structure may impact financial auditors' reliance on IT specialists. The office location of the IT specialist relative to the financial auditor represents spatial distance, a construct that reflects high social similarity when it is absent (i.e., same office) and low social similarity when it is present (i.e., different office).

Prior research indicates that financial auditors have concerns about IT specialist competence (Bagranoff and Vendrzyk 2000). As a result, it is important to examine a construct that has the potential to impact perceptions of IT specialist competence in a setting in which financial auditors rely on an IT specialist. In addition to the spatial distance between the IT specialist and the financial auditor, I examine the impact of the IT specialist's professional designation(s) on financial auditors' reliance on the IT specialist. Since professional designations reflect an individual's domain knowledge, I examine how the domain knowledge distinctiveness of the IT specialist relative to the financial auditor impacts financial auditor reliance decisions. The more overlap there is in the domain knowledge of the IT specialist relative to the financial auditor, the more socially similar the two individuals are; however, the more distinct the domain knowledge, the less socially similar the IT specialist is compared to the financial auditor.

Results from an experiment conducted on 60 financial auditors indicate that both domain knowledge distinctiveness and spatial distance affect financial auditor's reliance in terms of audit

planning decisions. When an IT specialist is outsourced from another office location, the financial auditor relies more heavily on the IT specialist's control risk assessments. This can be interpreted as a "consultant effect," in which IT specialists are a relied upon more because they are coming onto the engagement from elsewhere. This finding illustrates the power of weak ties in increasing reliance on specialists.

While outsourcing IT specialists from other firm offices appears to result in higher reliance by financial auditors, professional designations play an important role as well. The aforementioned "consultant effect" appears to be driven by situations in which the IT specialist is already socially dissimilar relative to the financial auditor in terms of domain knowledge distinctiveness. Specifically, it is only when IT specialists possess a CISA designation, and not a CPA designation, that there is a difference in financial auditor reliance in terms of spatial distance.

Results indicate that the effect of the IT specialist's social similarity in terms of domain knowledge distinctiveness on financial auditor reliance depends on the IT specialist's social similarity in terms of spatial distance. This study does not find evidence of increased reliance on in-house IT specialists that are more socially similar in terms of domain knowledge (i.e., CISA-CPA) relative to in-house IT specialists that are more socially dissimilar in terms of domain knowledge (i.e., CISA). However, despite this study's small sample size, which diminished the power of the statistical tests used for hypotheses testing, results related to such an in-group bias approach marginal significance. Additional data collection is warranted to rule out Type II error.

Results provide some evidence that when IT specialists are outsourced from another office within the firm, those that are socially dissimilar in terms of domain knowledge (i.e., CISA) are relied upon more by the financial auditor than IT specialists that are socially similar in

terms of domain knowledge (i.e., CISA-CPA). Contrary to the in-group bias predicted by social identity theory, this finding provides preliminary evidence of a preference for the socially dissimilar.

Certain scope decisions of audit planning appear to play important roles in contributing to differences in overall financial auditor reliance on the IT specialist. While staffing scope decisions do not appear to be affected by the social similarity dimensions examined in this study, the nature, timing, and extent scope decisions of financial auditors do appear to be affected by one or both of the social similarity dimensions investigated in this study.

The nature of planned audit procedures is affected by spatial distance such that financial auditors plan more procedures when the IT specialist is spatially distant than when the IT specialist is not spatially distant. Since financial auditors budget the most number of year-end (as opposed to interim) audit hours when the IT specialist possesses distinct domain knowledge and is spatially distant, the timing of procedures is shifted to year-end more when the IT specialist is socially dissimilar in terms of both domain knowledge and spatial distance than when the IT specialist is socially similar in terms of at least one of these two dimensions. Finally, financial auditors' extent scope decisions are most similar to their overall reliance decisions in that the effect of domain knowledge distinctiveness on the number of hours budgeted depends on the spatial distance of the IT specialist. When the IT specialist is in-house, more hours are budgeted for IT specialists that have overlapping domain knowledge, consistent with an in-group bias or preference for the similar. Alternatively, when the IT specialist is outsourced from another firm office, more hours are budgeted for IT specialists possessing distinct domain knowledge, consistent with a preference for the dissimilar.

87

8.1 Implications

This study contributes to both research and practice. My findings indicate a boundary condition under which the well-established psychological theory of social identity does not hold. In particular, when specialists are outsourced from other offices, there appears to be some evidence of a preference for the socially dissimilar in terms of domain knowledge, or higher reliance on an individual with a unique professional designation, contrary to SIT. However, consistent with SIT, when specialists reside in the same office, there is evidence approaching marginal significance for a preference for the socially similar in terms of domain knowledge, or an individual with a shared professional designation. I propose that a broader theory of social similarity is more inclusive and descriptive of our socially complex world than social identity theory because dimensions of social similarity can interact, thereby generating different social biases that affect behaviors in distinctive ways not predictable by SIT.

Although audit firms may have considered moving IT specialists to work alongside financial auditors within the same office to promote stronger relationships amongst these auditors, my findings indicate that reliance on the IT specialist is highest when the IT specialist is outsourced from another office and possesses a distinct CISA designation. My operationalization of spatial distance specifically tests reliance on IT specialists brought onto the engagement from another office in a situation in which all other in-house IT specialists are assigned to other engagements. This conservative operationalization of spatial distance would have biased against my finding results. Though I don't examine a scenario in which IT specialists are brought onto engagements from specific IT specialist "hub" office locations as needed, I provide preliminary evidence that can inform audit firms about the potential incremental benefits of organizing IT specialists, and perhaps other specialists, in distinct offices from audit personnel.

88

Furthermore, while audit firms may have considered encouraging IT specialists to gain additional education (i.e., a CPA) in an effort to promote better communication and increase the strength of social ties with financial auditors, it appears that outsourced IT specialists possessing just one professional designation in the primary area of expertise (i.e., CISA) results in the highest reliance by financial auditors. Rather than encouraging IT specialists to acquire a CPA designation to improve financial auditor reliance on IT specialists, firms can focus their attention towards creating IT specialist offices that are distinct from offices that house financial audit personnel. It may behoove firms to have all their non-financial auditor risk assurance specialists at unique offices, as reliance on other risk assurance specialists may increase by way of the same organizational structure.

8.2 Limitations

There are several limitations to be considered in interpreting the results of this study. First, my results are based on a small sample of 60 auditors. Due to the length of my experiment and the great difficulties involved in recruiting audit personnel for participation in my study, I am limited in terms of the power of my tests. While the statistically significant effects I detect in my study must be large in size given my small sample, I cannot be certain that my tests have the necessary power to detect other effects (i.e., H1 and H3) that are present.

Second, the judgmental nature of the audit planning task used to capture actual financial auditor reliance decisions provides some constraints to normative prescriptions based on my results. Reliance comparisons across conditions in my study are relative to one another and not relative to some normative benchmark of optimal reliance. It is possible that the "consultant effect" documented in my study would result in audit efficiency problems (i.e., over-auditing).

89

Third, the experimental nature of this study prevents me from incorporating all the rich information an auditor would encounter while involved in planning an actual audit. My manipulations of domain knowledge distinctiveness and spatial distance were attempts at operationalizing social similarity; these manipulations may not adequately capture the power of social similarity as it exists in reality. One significant drawback in this respect is that the participants in my study did not socially interact with the IT specialist that provided control risk assessments. However, given that my manipulations of the domain knowledge distinctiveness and spatial distance dimensions of social similarity had effects on reliance, I would expect that real-world social interaction would result in even stronger effects than those documented here.

Fourth, my choice of the Houston office (relative to the Tampa office) to reflect the presence (absence) of spatial distance is also a limitation to my study. There may be a level of spatial distance in which SIT would continue to hold. For example, had I chosen the St. Petersburg office as the spatial distance present manipulation, financial auditors may have relied on the outsourced IT specialists differing in terms of domain knowledge consistent with SIT because St. Petersburg, though a different city from the Tampa office, forms part of the Tampa Bay region. Thus, my choice of the degree of spatial distance between the offices in my study may not generalize to other settings in which offices are closer in proximity.

Fifth, my study's results, which are found in an auditing setting, are not necessarily generalizable to other non-auditing tasks in which an individual relies on an expert or specialist. The audit setting is a unique one in the sense that the audit firm serves a monitoring role for audit clients, with the ultimate goal of providing assurance to users of the audit clients' financial statements.

Lastly, my sample of participants, though randomly assigned across conditions, was not randomly selected from a population of all auditors. Given the unique nature of my spatial distance operationalization, I recruited from a broad cross-section of firms in the Tampa Bay region. Because the choice of region may have impaired the generalizability of results to auditors in other regions of the United States, I took great care in recruiting participants from all the Big 4 firms as well as other national and regional firms.

8.3 Future Research

There are ample opportunities for future research in this area. While my findings provide evidence that audit quality can be improved by way of audit effectiveness by outsourcing IT specialists (especially those possessing only the CISA designation), future research can examine the audit efficiency component of audit quality. For example, in lieu of examining *increases* in financial auditors' planned audit procedures made in response to an IT specialist's *increased* control risk assessment relative to a prior year, one can examine the *decrease* in financial auditors' planned audit procedures in response to an IT specialist's *decreased* control risk assessment relative to a prior year. In essence, to what degree will audit efficiency improve because of increased reliance on controls deemed more reliable (relative to the prior year) by the IT specialist?

Other opportunities for future research may include examining financial auditors' reliance on other types of specialists. Although my study examines a setting involving financial auditors' reliance on IT specialists, the audit setting is abound with many examples of specialists engaged to aid with the audit. Examples of specialists include valuation experts, actuaries, engineers, environmental consultants, geologists, tax specialists, and attorneys. Though my findings provide support for the interaction of the social similarity dimensions of domain

91

knowledge distinctiveness and spatial distance in affecting reliance on IT specialists, future studies should examine whether similar patterns hold in settings involving auditor reliance on other types of specialists.

Finally, my study investigates how financial auditors rely on specialists that form part of the engagement team. However, some specialists have permanent positions within the firm, while others are outsourced from outside the firm. Consequently, it may be worthwhile to investigate other settings in which financial auditors rely on specialists that are not members of the audit firm's personnel or not members of the audit engagement team. Auditors' reliance on non-audit engagement team member specialists is a unique setting that should be investigated because the auditor should make additional assessments of these specialists' competence, objectivity, and work performance when determining the degree of reliance. This is especially important in situations in which the specialist is engaged by management as opposed to the auditor. The area of auditor reliance on specialist provides fruitful avenues for future research.

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94

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APPENDICES

Appendix A: Experimental Instrument

1. Gender:

○ Male
○ Female

2. Age : _____

3. In what **city** and **state** did you grow up? (If you grew up in another country, type NA)

CITY: _____   STATE: _____

4. For which of the following audit firms do you currently work?

○ Big 4 Firm
○ National Firm (e.g., Grant Thornton, McGladrey, BDO, Crowe Horwath)
○ Regional Firm
○ Local/Small Firm
○ None of the Above (Please explain in the text box below.) _____

5. Please select which of the following best describes your **position/role** in the audit firm.

○ Staff auditor (staff assistant)
○ Senior
○ Manager
○ Senior manager
○ Partner
○ Other (please specify) _____

6. How long have you been employed with your **current audit firm?** (Enter '0' for none.)

____Years

____Months

7. How long have you worked as an auditor in **public accounting**?   (Enter '0' for none.)

____Years

____Months

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8. I currently **possess** the following professional certification(s):
- ❑ CPA (Certified Public Accountant)
- ❑ CA (Chartered Accountant)
- ❑ CISA (Certified Information Systems Auditor)
- ❑ CFE (Certified Fraud Examiner)
- ❑ CIA (Certified Internal Auditor)
- ❑ CMA (Certified Management Accountant)
- ❑ Other (please specify) _____
- ❑ None

9. Do you **plan** on pursuing any of the following professional certification(s) within the next two years?
 CPA (Certified Public Accountant)
- ❑ CA (Chartered Accountant)
- ❑ CISA (Certified Information Systems Auditor)
- ❑ CFE (Certified Fraud Examiner)
- ❑ CIA (Certified Internal Auditor)
- ❑ CMA (Certified Management Accountant)
- ❑ Other (please specify) _____
- ❑ None

10. Did you have a systems-related major or concentration in college (e.g., MIS major)?

- ❍ Yes
- ❍ No

11. Did you have a systems-related minor in college (e.g., IS minor)?

- ❍ Yes
- ❍ No

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12. How much experience do you have performing **tests of internal controls** over financial reporting? (Enter '0' for none.)

    ____Years

    ____Months

13. How much experience do you have **planning further audit procedures** on external audit engagements?   (Enter '0' for none.)

    ____Years

    ____Months

<PAGE BREAK>

99

PINNACLE INC. CASE STUDY

BACKGROUND

Assume that you are the senior manager assigned to the 12/31/12 fiscal year-end audit of Pinnacle Inc. You have worked for the **Tampa office** of your firm for 7 years and acquired your **CPA (Certified Public Accountant)** designation after being with the firm for 3 years. Your firm has offices throughout the United States, with its national office (headquarters) in New York City.

The audit team for the Pinnacle Inc. engagement consists of you (a senior manager), four staff auditors, a junior manager, an IT specialist, and a partner. Pinnacle Inc. is a publicly held, mid-sized manufacturer of sporting goods equipment headquartered in Tampa, FL. It makes a variety of products for baseball, football, hockey, basketball, hunting, and fishing. Its products are sold across the U.S. to retailers of sporting goods equipment and also directly to customers via its Internet website. Your firm has audited Pinnacle Inc. for the last five years and past audits have always resulted in unqualified audit opinions. As in the prior year, the partner in-charge of the Pinnacle Inc. audit has set audit risk at a low level of 5%.

The financial statements and materiality calculations for Pinnacle Inc. can be viewed by clicking the following link: Financial Statements and Materiality Calculations. Feel free to keep these materials open and refer to these items at any time.

It is now October of 2012 and you are currently in the planning/internal control phase of the 12/31/12 fiscal year-end audit.

TASK OBJECTIVE

Based on the information provided in this case, you will be asked **to prepare audit programs and budgets** for the current year's (12/31/12) substantive tests of the Sales and Collection Cycle of Pinnacle Inc. It is important that you respond to questions in this case study as you normally would.

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Pinnacle Inc.
Balance Sheets
(in thousands)

Assets	9/30/2012 (Unaudited)	12/31/2011 (Audited)	12/31/2010 (Audited)
Current assets:			
Cash and cash equivalents	$ 2,599	$ 2,499	$ 2,380
Accounts receivable, net of allowances for doubtful accounts of 305, 294, and 280, respectively	2,219	2,114	1,994
Inventory	81,097	76,507	73,564
Prepaid advertising	3,592	3,453	3,289
Other prepaid expenses	1,782	1,697	1,601
Deferred income tax benefits	4,055	3,825	3,678
Total current assets	$ 95,343	$ 90,095	$ 86,506
Property, plant, and equipment, at cost:			
Land and buildings	33,267	31,987	30,464
Fixtures and equipment	36,122	34,402	32,455
Leasehold improvements	906	855	822
Total property, plant, and equipment	$ 70,295	$ 67,244	$ 63,741
Less – accumulated depreciation	23,627	22,718	21,636
Property, plant, and equipment, net	$ 46,669	$ 44,527	$ 42,105
Intangibles, net	1,204	1,147	1,082
Total assets	$143,216	$135,768	$129,693
Liabilities and shareholders' equity			
Current liabilities:			
Accounts payable	$ 27,441	$ 25,769	$ 24,370
Accrued liabilities	14,872	13,556	12,888
Short-term notes payable	4,076	3,554	3,289
Income taxes payable	5,205	4,596	4,241
Total current liabilities	$ 51,594	$ 47,476	$ 44,788
Deferred income taxes	2,667	2,516	2,337
Long-term liabilities	190	182	173
Shareholders' equity:			
Common stock, 17,773,000 shares issued	177	177	177
Additional paid-in capital	15,146	15,146	15,146
Retained earnings	109,818	104,588	99,527
Treasury stock (at cost)	(36,376)	(34,317)	(32,455)
Total shareholders' equity	$ 88,764	$ 85,594	$ 82,395
Total liabilities and shareholders' equity	$143,216	$135,768	$129,693

101

Pinnacle Inc.
Materiality Calculations

Materiality Calculations   **CURRENT YEAR**

(in thousands)	12/31/12 Audit	12/31/11 Audit	12/31/10 Audit
Income Before Income Taxes	20,971 (a)	20,854	20,689
Multiply by 5%	× 0.05	× 0.05	× 0.05
Result: Planning Materiality	1,049	1,043	1,034
Multiply by 25%	× 0.25	× 0.25	× 0.25
Result: Tolerable Misstatement	262	261	259

Note: Planning Materiality is the preliminary estimate of materiality made during initial planning. Monetary misstatement is the application of Planning Materiality at the individual account balance level.

Estimate of 12/31/12 amount represents the 9/30/12 Income Before Income Taxes amount annualized (15,728/0.75 =20,971).

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INSTRUCTION:
Please review the following guidance for assessing risks and planning substantive procedures adapted from AS No. 8 (PCAOB 2010).

AUDIT GUIDANCE: AS No. 8

AS No. 8 provides the conceptual underpinning for the audit risk model. The auditor applies the audit risk model during the planning/internal control phase of the audit. Audit risk (AR) is the **risk that the auditor expresses an inappropriate audit opinion** when the financial statements are materially misstated. Audit risk is the product of the following interrelated factors:

- Inherent Risk (IR) = the risk that a financial statement assertion is susceptible to a material misstatement, assuming there are no related controls.

- Control Risk (CR) = the risk that the entity's internal control structure or procedures will not prevent or detect, in a timely manner, a material misstatement which could occur in a financial statement assertion.

- Detection Risk (DR) = the risk that the auditor will not detect a material misstatement that exists in a financial statement assertion.

Mathematical Model: **AR = IR x CR x DR**, where AR, IR, CR, and DR are specified as <u>percentages</u>.

DR has an **inverse** relationship with the scope of substantive testing procedures; thus, when DR decreases from one year to the next, the scope of planned substantive procedures can be increased.

Holding everything else constant, when IR increases, the scope of planned substantive procedures is increased in response to the corresponding decrease in DR.

Holding everything else constant, when CR increases, the scope of planned substantive procedures is increased in response to the corresponding decrease in DR.

EXAMPLE:

If **control risk** associated with the sales and collection cycle is assessed at a **higher** level in the current year in comparison to the prior year, all other things held constant, the auditor may consider **increasing** the number of accounts receivable confirmations tested in the current year over that of the prior year. As IR and CR increase, the auditor is expected to compensate with substantive procedures that are greater in scope to reduce DR.

<PAGE BREAK>

103

PLEASE READ THE FOLLOWING CAREFULLY.

In the current year, you have assessed inherent risk at the same level as last year (35%).

The IT specialist on the engagement team, **D.J. Richards**, is responsible for preparing the **Control Testing and Risk Assessment Workpaper**.

D.J. Richards is an IT specialist who has worked in **your office (the Tampa office)** of your firm for 6 years and has performed tests of controls on similar audit engagements in the past. D.J. Richards possesses the following professional designation, which he acquired after being with the firm for 3 years:

- **CISA (Certified Information Systems Auditor)**

You are about to receive D.J. Richards' completed workpaper documenting his control testing and related control risk assessments.

INSTRUCTION:
Please click on the following link: Control Testing and Risk Assessment Workpaper. **Keep this file OPEN throughout the study.**

Please **read** the workpaper you just opened.

For ease of **comparison**, the workpaper includes information pertaining to:
- **Your tests of controls from last year (the initials "YOU" correspond to your initials) and**
- **D.J. Richard's tests of controls from this year (initials: "DJR")**

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If you accidentally closed the **Control Testing and Risk Assessment Workpaper** and wish to see it again for the purpose of answering the following questions, please click on the following link: Control Testing and Risk Assessment Workpaper.

If you wish to refer back to the Financial Statements and Materiality Calculations, please click on the following link: Financial Statements and Materiality Calculations.

INSTRUCTION:

On the line below, please enter the 6-digit **workpaper number** located on the top right-hand side of the Control Testing and Risk Assessment Workpaper.

Workpaper Number: _____

MEMO   **Workpaper Number: 261985**

To: YOU, CPA (Cert. Public Accountant), Tampa Office
From: DJR, CISA (Cert. Information Systems Auditor), Tampa Office

Re: Control Risk Assessment Workpaper

Please find my workpaper documenting the control testing I performed and my related control risk assessments for the Sales and Collection Cycle below.

Pinnacle Inc.: FYE 12/31/12		Prior Year		Current Year	
	Preparer:	YOU	10/15/2011	**DJR**	**10/17/2012**
	Reviewer:	LDM	10/22/2011		
		JSP	10/25/2011		

Control Testing & Risk Assessment Workpaper
   Sales and Collection Cycle

Audit Risk	5%		5%
Inherent Risk	35%		35%
Tolerable Misstatement	$264,000		$261,000

Control Risk (CR) Assessment Scale

   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
   Low   Moderate   High
   Risk   Risk   Risk

	2011		2012	
Controls Tested	Testing Result	Control Risk	Testing Result	Control Risk
1. Passwords are used to ensure only authorized user access to the sales and collection applications.	Reliable	25%	Reliable	23%
2. System requires an approved sales order to produce a shipping document and system only bills for quantities shipped.	Reliable	29%	Deficient	75%
3. Unit selling prices match those contained in the price list master file of approved prices.	Reliable	20%	Reliable	18%
4. System automatically posts sales transactions to the accounts receivable subsidiary ledger & general ledger.	Reliable	25%	Reliable	30%
5. Entry of non-electronic customer orders is verified by another employee to ensure accurate order entry.	Reliable	30%	Reliable	28%
6. Sales order entry permissions are not assigned to the same roles as credit approval permissions by the application security administrator.	Reliable	35%	Deficient	74%
7. System compares customer order with customer's authorized credit limit and current account balance.	Reliable	17%	Reliable	20%
8. Customer orders in excess of automatic computer authorized credit limits have signatures of credit management evidencing proper credit limit override.	Reliable	37%	Reliable	35%
Overall Control Risk Assessment for Sales & Collection Cycle:		**30%**		**70%**

Control risk assessments were based on current (prior) year testing of internal controls, which indicated that the client largely relies on adequate separation of duties and proper authorization of transactions to meet its control objectives.

                                                            1-2

Thank you,

D. J. Richards

D.J. Richards, CISA (Cert. Information Systems Auditor), Tampa Office

The following questions appeared only once the correct workpaper number was entered above.

INSTRUCTION:
Please circle your responses to the statements/questions below.

1. In your opinion, the **strength** (i.e., effectiveness) of the control **testing** performed by D.J. Richards was probably:

      1   2   3   4   5   6   7   8   9   10
   Very   Very
   Weak   Strong

2. In your opinion, the **accuracy** of the control **risk assessments** made by D.J. Richards is probably:

      1   2   3   4   5   6   7   8   9   10
   Not   Very
   Accurate   Accurate

3. In your opinion, the **reliability** of the control testing and risk assessment **workpaper** prepared by D.J. Richards is probably:

      1   2   3   4   5   6   7   8   9   10
   Not   Very
   Reliable   Reliable

4. In your opinion, how **credible** is **D.J. Richards** as a source of control testing and control risk assessments?

      1   2   3   4   5   6   7   8   9   10
   Not   Very
   Credible   Credible
    at All

5. In your opinion, how **trustworthy** is **D.J. Richards** with respect to the preparation of the Control Testing and Risk Assessment Workpapers?

      1   2   3   4   5   6   7   8   9   10
  Not at All   Very
  Trustworthy   Trustworthy

6. In your opinion, how would you rate **D.J. Richards' expertise** in the following areas?

	Low Level of Expertise			Moderate Level of Expertise			High Level of Expertise
Information Technology Control Risk Assessment	❍	❍	❍	❍	❍	❍	❍
Financial Statement Auditing	❍	❍	❍	❍	❍	❍	❍

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106

If you accidentally closed the **Control Testing and Risk Assessment Workpaper** that you will need for the purpose of planning the substantive procedures for the Sales and Accounts Receivable Audit Programs below, please click on the following link: Control Testing and Risk Assessment Workpaper.

If you wish to refer back to the **Financial Statements and Materiality Calculations**, please click on the following link: Financial Statements and Materiality Calculations.

If you wish to review the AS No. 8 guidance on using the Audit Risk Model for the purposes of making changes to the planned substantive procedures in the programs below, please click on the following: AS No. 8 Guidance.

CURRENT YEAR WORKPAPERS: Sales & Accounts Receivable Audit Programs and Budgets

INSTRUCTION:
Recall that the partner has set AR (audit risk) at the same level as last year (5%) and your IR (inherent risk) assessment for this year is the **same** relative to last year (35%).

Comparing <u>D.J. Richard's</u> current CR (control risk) assessments to <u>your</u> CR assessments from last year, please complete the workpapers that follow.

Below you will find information pertaining to the prior year audit procedures and budgets. **For each procedure, respond as to whether you would like to**

- **REPEAT** (i.e., repeat procedure, performer, timing, AND budgeted hours for the current year),
- **DELETE** (i.e., eliminate the procedure for the current year),
- <u>OR</u> **CHANGE** (i.e., change the performer, timing, AND/OR budgeted hours of the procedure).

You will also have the opportunity to input any customized procedures that you would like performed.

Pinnacle Inc.: FYE 12/31/12
12/31/12 Audit Program and Budget: SALES ACCOUNT

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
1. Compare sales to an expectation of sales (by product line). Roll-forward interim account balance to fiscal year-end.	Staff Auditor	Interim	16

Current Year:
Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
2. Compare sales returns and allowances as a percentage of gross sales with previous years (by product-line). Roll-forward interim account balance to fiscal year-end.	Staff Auditor	Interim	5

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
3. Compare bad-debts expense as a percentage of gross sales with previous years. Roll-forward interim account balance to fiscal year-end.	Staff Auditor	Interim	5

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
4. Review sales journal and master file for unusual transactions and amounts.	Staff Auditor	Final	4

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
5. Select a sample of shipping documents and trace transactions to the sales journal.	Staff Auditor	Interim	6

Current Year:

Repeat, Delete, or Change ▼

Performed by: ▼

Timing (Interim: 9/30/12 or Final: 12/31/12) ▼

Budgeted Hours ▼

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
6. Perform sales cut-off testing by sampling sales transactions from the sales journal before and after fiscal year-end and tracing to sales invoice and bill of lading.	Staff Auditor	Final	5

Current Year:

Repeat, Delete, or Change ▼

Performed by: ▼

Timing (Interim: 9/30/12 or Final: 12/31/12) ▼

Budgeted Hours ▼

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
7. Select a sample of transactions from the sales journal, trace transaction to invoice, recompute extensions on sales invoices, and trace details on sales invoices to shipping documents and customer order.	Staff Auditor	Interim	6

Current Year:

Repeat, Delete, or Change ▼

Performed by: ▼

Timing (Interim: 9/30/12 or Final: 12/31/12) ▼

Budgeted Hours ▼

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
8. Select a sample of transactions from the sales journal and trace transactions to the accounts receivable subsidiary ledger.	Staff Auditor	Interim	6

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Are there any **additional** procedures for the audit program and budget for the **SALES ACCOUNT** that you would like to add for the current year? If **YES**, please input procedures below along with the performer, timing, and budgeted hours for each additional procedure. If **NO**, please continue on to the Accounts Receivable Audit Program.

	Additional Audit Procedures (if any)	(Staff auditor, Senior, or Manager) Performed By	(Interim: 9/30/12or Final: 12/31/12) Timing	Budgeted Hours
9.				
10.				
11				
12				
13				
14				
15				

110

Pinnacle Inc.: FYE 12/31/12
12/31/12 Audit Program and Budget: Accounts Receivable

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
1. Select a sample from the accounts receivable subsidiary ledger, trace accounts to the accounts receivable trial balance, and obtain positive confirmation. Perform alternative procedures for non-responses. Roll-forward interim account balance to fiscal year-end.	Staff Auditor	Interim	18

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
2. Obtain an ages list of receivables: select a sample of accounts and trace to the accounts receivable trial balance, foot trial balance, and trace to the general ledger. Investigate the collectability of account balances on aged list of receivables.	Staff Auditor	Interim	10

Current Year:

Repeat, Delete, or Change

Performed by:

Timing (Interim: 9/30/12 or Final: 12/31/12)

Budgeted Hours

111

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
3. Obtain an analysis for the allowance for doubtful accounts and bad debt expense: test accuracy, examine authorization for write-offs, and trace to general ledger.	Staff Auditor	Interim	6

Current Year:

Repeat, Delete, or Change ▼

Performed by: ▼

Timing (Interim: 9/30/12 or Final: 12/31/12) ▼

Budgeted Hours ▼

Prior Year:

Audit Procedure	Performed By	Timing	Budgeted Hours
4. Review lists of balances for amounts due from related parties or employees, credit balances, unusual items, and notes receivable due after one year.	Staff Auditor	Final	6

Current Year:

Repeat, Delete, or Change ▼

Performed by: ▼

Timing (Interim: 9/30/12 or Final: 12/31/12) ▼

Budgeted Hours ▼

112

Are there any **additional** procedures for the audit program and budget for **ACCOUNTS RECEIVABLE** that you would like to add for the current year? If **YES**, please input procedures below along with the performer, timing, and budgeted hours for each additional procedure. If **NO**, please click the "Continue" button at the bottom of the page.

	Additional Audit Procedures (if any)	(Staff auditor, Senior, or Manager) **Performed By**	(Interim: 9/30/12 or Final: 12/31/12) **Timing**	**Budgeted Hours**
5.				
6.				
7.				
8.				
9.				
10.				
11.				

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Please **close** the "Control Testing and Risk Assessment Workpaper" window.
Do NOT close THIS window.

❑ I have **closed** the window containing the "Control Testing and Risk Assessment Workpaper."

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Manipulation Check Questions

1. **D.J. Richards** possesses the following **professional designation(s)**:

❍ **Only** a CISA (Certified Information Systems Auditor)
❍ **Only** a CPA (Certified Public Accountant)
❍ **Both** a CISA (Certified Information Systems Auditor) AND a CPA (Certified Public Accountant)

2. **D.J. Richards** is an **IT specialist** from which **office** of your firm?

❍ Tampa Office
❍ Houston Office

<PAGE BREAK>

113

Post-Experimental Questionnaire

Thank you for preparing your current workpapers for Pinnacle Inc. Please complete the following questionnaire to finish the research project. Again, be assured that all of your responses will be used for academic purposes only and will remain **completely confidential**.

INSTRUCTION:
Please indicate your responses to the following statements.

1. The **competence** level of **D.J. Richards** was:

1	2	3	4	5	6	7	8	9	10	11
Very Low										Very High

2. The **strength** of Pinnacle Inc.'s **controls** listed on the current year control testing workpaper for the sales and collection cycle were:

1	2	3	4	5	6	7	8	9	10	11
Very Weak										Very Strong

3. The **overall conclusion** from the current year control testing workpaper prepared by **D.J. Richards** indicated **controls** were:

1	2	3	4	5	6	7	8	9	10	11
Very Unreliable										Very Reliable

4. My **confidence** level in the audit plan and budget decisions I provided in the case is:

1	2	3	4	5	6	7	8	9	10	11
Very Low										Very High

5. Relative to the average cost of employing a staff auditor, **how costly** do you believe it was to employ **D.J. Richards** to the engagement for the purpose of testing controls and performing control risk assessments?

1	2	3	4	5	6	7	8	9	10	11
Much Less Costly					Equally Costly					Much More Costly

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1. Based on the case materials and using the scale below, indicate your agreement with the statement below.

	Not at All 1	2	3	4	5	6	7	8	Very Much 9
As an engagement team member, I identify with D.J. Richards.	○	○	○	○	○	○	○	○	○

2. Based on the case materials and using the scale below, indicate your agreement with the statement below.

	Not at All 1	2	3	4	5	6	7	8	Very Much 9
It is important to me to work with someone like D.J. Richards on audit engagements.	○	○	○	○	○	○	○	○	○

3. Based on the case materials and using the scale below, indicate your agreement with the statement below.

	Not at All 1	2	3	4	5	6	7	8	Very Much 9
As an engagement team member, I feel strong ties to D.J. Richards.	○	○	○	○	○	○	○	○	○

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115

1. When you were adjusting the audit plan and budget in response to D.J. Richard's control risk assessment workpaper, to what extent did the following factors affect your decisions?

	Not At All 1	2	3	4	5	6	7	To a Great Extent 8
D.J. Richard's **Office Location**: Tampa Office	○	○	○	○	○	○	○	○
D.J. Richard's **Professional Designation**: CISA (Certified Information Systems Auditor)	○	○	○	○	○	○	○	○

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1. The **financial statements** of Pinnacle Inc. significantly affected my audit programs and budgets.

```
        1     2     3     4     5     6     7     8     9     10    11
     Disagree                                                     Agree
```

2. Had the **financial statements** of Pinnacle Inc. **not been provided**, my audit programs and budgets would have been very similar.

```
        1     2     3     4     5     6     7     8     9     10    11
     Disagree                                                     Agree
```

3. When arriving at an assessment of **D.J. Richards'** competence, I rate the importance of his **office location** as:

```
        1     2     3     4     5     6     7     8     9     10    11
       Not                                                       Very
    Important                                                 Important
```

4. When arriving at an assessment of **D.J. Richards'** competence, I rate the importance of his **professional designation(s)** as:

```
        1     2     3     4     5     6     7     8     9     10    11
       Not                                                       Very
    Important                                                 Important
```

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116

Recall that D.J. Richards, an IT specialist from the **Tampa Office** of your firm, possesses the following professional designation(s): **a CISA (Certified Information Systems Auditor)**.

Please answer the following questions:

1. In your opinion, the **strength** (i.e., effectiveness) of the control **testing** performed by D.J. Richards was probably:

1	2	3	4	5	6	7	8	9	10
Very									Very
Weak									Strong

2. In your opinion, the **accuracy** of the control **risk assessments** made by D.J. Richards is probably:

1	2	3	4	5	6	7	8	9	10
Not									Very
Accurate									Accurate

3. In your opinion, the **reliability** of the control testing and risk assessment **workpaper** prepared by D.J. Richards is probably:

1	2	3	4	5	6	7	8	9	10
Not									Very
Reliable									Reliable

4. In your opinion, how **credible** is **D.J. Richards** as a source of control testing and control risk assessments?

1	2	3	4	5	6	7	8	9	10
Not									Very
Credible									Credible
at All									

5. In your opinion, how **trustworthy** is **D.J. Richards** with respect to the preparation of the Control Testing and Risk Assessment Workpapers?

1	2	3	4	5	6	7	8	9	10
Not at All									Very
Trustworthy									Trustworthy

6. In your opinion, how would you rate **D.J. Richards' expertise** in the following areas?

	Low Level of Expertise			Moderate Level of Expertise			High Level of Expertise
Information Technology Control Risk Assessment	❍	❍	❍	❍	❍	❍	❍
Financial Statement Auditing	❍	❍	❍	❍	❍	❍	❍

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117

Imagine that you have recently been **licensed** as a **CPA (Certified Public Accountant)** after completing the 150 credit hour requirement as well as the 1 year full-time work experience requirement.

Indicate your **level of agreement** with the following statements:

	Strongly Disagree 1	2	3	4	5	6	7	Strongly Agree 8
The public accounting profession should make it **easier** for future applicants to obtain a CPA professional designation.	❍	❍	❍	❍	❍	❍	❍	❍
The 150 credit hour education requirement ensures that members of the CPA profession possess the **minimum knowledge necessary**.	❍	❍	❍	❍	❍	❍	❍	❍
The work experience requirement of 1 year of full-time work or 2 years of part-time work ensures that members of the CPA profession possess the **minimum experience necessary**.	❍	❍	❍	❍	❍	❍	❍	❍
Members of the CPA profession form part of an **exclusive** group of individuals.	❍	❍	❍	❍	❍	❍	❍	❍
Anyone should be permitted to become a member of the CPA profession.	❍	❍	❍	❍	❍	❍	❍	❍
The CPA profession is a **prestigious** group of individuals.	❍	❍	❍	❍	❍	❍	❍	❍
Individuals from **other disciplines** (besides accounting) should be permitted to become members of the CPA profession.	❍	❍	❍	❍	❍	❍	❍	❍
Strict licensure requirements ensure that the public will continue to view members of the CPA profession as **credible** and **trustworthy**.	❍	❍	❍	❍	❍	❍	❍	❍

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8. Consider a situation in which an individual possesses **two professional designations**: one in his/her field of expertise and one in an area **outside** his/her field of expertise.

Indicate your **level of agreement** with the following statements:

	Strongly Disagree 1	2	3	4	5	6	7	Strongly Agree 8
No one can be an expert in multiple fields. By having two professional designations, this individual is a "jack of all trades" and not an expert in his/her specialty field.	❍	❍	❍	❍	❍	❍	❍	❍
The more professional designations a person has, the more intelligent and competent that individual is. By having two professional designations, this individual is an expert in multiple fields.	❍	❍	❍	❍	❍	❍	❍	❍
A second professional designation does not have any meaningful effect on a person's competence. Having two professional designations in no way affects this individual's competence in his/her field of expertise.	❍	❍	❍	❍	❍	❍	❍	❍

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1. What type of auditor would you describe yourself to be?

1	2	3	4	5
Financial Auditor				IT Auditor

2. Based on your experience, to what extent do your engagements utilize IT specialists from **other offices** outside your office of the firm.

1	2	3	4	5	6	7	8	9
Not at All								To a Great Extent

Question 3 appears if the prior question was answered as anything but 1.

3. Based on your experience, what is the **primary reason** that an IT specialist from **another office** outside your office is utilized for engagements requiring an IT specialist? (select one)

❍ Because all other IT specialists in my office are assigned to other engagements.
❍ Because an IT specialist with a particular area of expertise (i.e., industry expertise) is needed.
❍ Because my office does not have IT specialists on staff.
❍ Other reason (please explain). _____

119

4. Relative to other auditors at my firm, I have a **higher** level of expertise with accounting information systems.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

5. My **motivation** level to complete this case study could be described as:

1	2	3	4	5	6	7	8	9
Very Low								Very High

6. How **difficult** was this research experiment?

1	2	3	4	5	6	7	8	9
Very Difficult								Very Easy

7. How **realistic** do you feel the case materials were?

1	2	3	4	5	6	7	8	9
Very Unrealistic								Very Realistic

8. How **attentive** were you to the case materials while participating in this experiment?

1	2	3	4	5	6	7	8	9
Not at All Attentive								Very Attentive

9. Do you have any comments about the experiment?

_____

Appendix B: Descriptive Statistics for Dependent Variables and Covariates
Table A 1: Descriptive Statistics for Dependent Variables and Covariates

	Mean (Standard Deviation)				
Spatial Distance:	Absent (In-House)		Present (Outsourced)		
Domain Knowledge:	<u>Distinct</u>	<u>Overlapping</u>	<u>Distinct</u>	<u>Overlapping</u>	<u>Overall</u>
	n = 16	n = 15	n = 14	n = 15	n = 60
Variables					
Planned Quality Budget Hours	173.06 (71.880)	210.73 (133.880)	262.29 (128.710)	199.87 (77.507)	210.00 (108.718)
Number of Planned Audit Procedures (Nature)	11.56 (1.896)	11.47 (1.685)	12.00 (1.519)	12.87 (2.326)	11.97 (1.922)
Number of More Senior Staffed Procedures (Staffing)	3.00 (3.864)	2.67 (2.469)	3.57 (2.593)	3.67 (3.109)	3.22 (3.031)
Number of Year-End Budgeted Hours (Timing)	45.81 (23.654)	49.87 (26.578)	72.36 (49.039)	49.93 (29.339)	54.05 (33.922)
Number of Budgeted Hours (Extent)	87.00 (19.779)	99.93 (30.281)	116.21 (31.665)	102.53 (25.997)	100.93 (28.413)
Audit Planning Experience (in months)	92.63 (104.214)	93.33 (104.495)	83.43 (99.446)	94.20 (105.669)	91.05 (100.991)
Audit Firm Size (smaller values = larger firms)	2.00 (0.966)	1.93 (1.033)	1.50 (0.650)	1.60 (0.507)	1.77 (0.831)
Auditor Type (1-Financial Aud. to 5-IT Aud.)	1.06 (0.250)	1.20 (0.414)	1.286 (0.611)	1.47 (0.834)	1.25 (0.571)
Motivation	5.50 (1.932)	5.53 (1.885)	5.64 (1.499)	6.13 (1.727)	5.70 (1.750)
IT Specialist Competence	6.25 (2.017)	7.07 (3.218)	6.71 (2.555)	7.87 (1.922)	6.97 (2.484)
IT Specialist Expertise (in terms of IT CR assessment)	4.75 (1.238)	4.67 (1.799)	4.86 (2.070)	5.13 (1.187)	4.85 (1.571)
Reliability of Controls	5.19 (1.797)	5.40 (2.165)	5.786 (2.455)	5.27 (2.404)	5.40 (2.164)
IT Specialist Credibility (pre-task)	5.68 (1.836)	6.04 (2.733)	6.200 (2.103)	6.973 (1.758)	6.21 (2.138)
IT Specialist Credibility (post-experiment)	6.20 (1.678)	6.68 (2.482)	6.03 (2.141)	7.17 (1.864)	6.52 (2.052)
IT Specialist Credibility (difference score)	0.53 (1.256)	0.64 (0.945)	(0.17) (0.592)	0.20 (0.980)	0.31 (1.008)
Identification with IT Specialist	4.19 (2.122)	4.84 (1.479)	5.21 (1.902)	4.71 (1.690)	4.72 (1.810)
CPA Profession Exclusivity	6.69 (1.177)	6.71 (1.690)	5.90 (1.349)	6.49 (1.246)	6.46 (1.379)

121

Appendix C: IRB Letter

USF
**UNIVERSITY OF
SOUTH FLORIDA**

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

March 20, 2013

Rina Limor, CPA
School of Accountancy
4202 East Fowler Ave.
Tampa, FL 33620

RE: **Exempt Certification**
IRB#:   Pro00012350
Title: Auditor Planning Judgments

Study Approval Period: 3/20/2013 to 3/20/2018

Dear Dr. Limor:

On 3/20/2013, the Institutional Review Board (IRB) determined that your research meets USF
requirements and Federal Exemption criteria as outlined in the federal regulations at
45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement),
survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified,
directly or through identifiers linked to the subjects; and (ii) any disclosure of the human
subjects' responses outside the research could reasonably place the subjects at risk of criminal or
civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Approval given for the below document(s):
Protocol

Auditor Informed Consent.docx
Student Informed Consent.docx
(Both consent forms granted a waiver of informed consent documentation under **45 CFR 46.117
(c)**)

As the principal investigator for this study, it is your responsibility to ensure that this research is
conducted as outlined in your application and consistent with the ethical principles outlined in
the Belmont Report and with USF IRB policies and procedures. Please note that changes to this
protocol may disqualify it from exempt status. Please note that you are responsible for notifying

122

the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a new application at least 60 days prior to the end of your exemption approval period. Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board

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