Overcoming Communication Challenges: Can Taking the Specialist's Perspective Improve Auditors' Critical Evaluation and Integration of the Specialist's Work?

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Abstract: This study investigates whether communication complexity (presentation of technical information) is a potential source of the challenges auditors encounter in critically evaluating and integrating technical information when auditing complex estimates. Moreover, we examine whether perspective taking (adopting the expert's perspective) improves auditor's processing of highly technical evidence when the communication complexity is high. We find that when information content is held constant, but the communication complexity of the expert's (e.g., specialist's) evidence is varied, auditors' judgments demonstrate lower critical evaluation and integration when communication complexity is high versus when it is low. We also find that auditors who take a specialist's perspective prior to reviewing high communication complexity specialist evidence exhibit higher critical evaluation and integration of the evidence than auditors who do not. Auditors who engage in specialist perspective taking and elect to follow-up on the specialist's evidence pursue more follow-up questions and allocate more audit effort to testing the specialist's evidence than other auditors. Regulators and auditors identify these follow-up actions as important inputs to audit quality. Thus, this study provides the first evidence that adopting a specialist's perspective when auditors are at an expertise disadvantage has the potential to enhance auditor's judgments and decision-making and has implications for collaboration across geographically distributed and cross-functional teams.

Keywords: Auditor perspective taking; communication complexity; cross-functional collaboration; evidence evaluation; auditors' use of specialist's work

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I. INTRODUCTION

We investigate whether adopting the perspective of an expert can improve auditors' ability to critically evaluate and integrate highly technical information (such as the specialist's evidence) when auditing complex estimates. The growth and prevalence of complex business transactions and the complexity of the information needed to account for these transactions have increased auditors' reliance on the work of audit firm-employed specialists (hereafter referred to as "specialist(s)") in numerous areas including actuarial, valuation, and information technology services (e.g., Smith-Lacroix, Durocher, and Gendron 2012; Harvest Investments 2015; PCAOB 2015a; Boritz, Robinson, Wong, and Kochetova-Kozloski 2015; Cannon and Bedard 2016; Glover, Taylor, and Wu 2017a).[1] While financial accounting regulators have expanded and updated accounting standards (e.g., FASB 2006, 2008, 2011), audit regulators have been less forthcoming in providing detailed guidance to auditors on how they should evaluate and incorporate the work of specialists (e.g., Glover et al. 2017a, 2017b), and even concede that current guidance is dated (e.g., PCAOB 2015b, 11). Consequently, auditors are left to exercise significant judgment when determining the nature and amount of testing to be performed on the specialist's evidence and the appropriate level of reliance to place on the work of specialists. Yet regulators have charged auditors with failure to fully incorporate the work of specialists and neglect in following up on issues flagged in the specialist's evidence (e.g., PCAOB 2010, 2012a, 2014a, 2014b; CPAB 2015a, 2015b; IFIAR 2015). These concerns could be symptomatic of an underlying problem of auditors exercising insufficient critical evaluation and integration of the specialist's evidence and other complex evidence in their audit conclusions.

[1] The PCAOB identifies two types of auditors' specialists: (1) specialists employed by the audit firm (also referred to as in-house specialists), and (2) 3rd party specialists engaged by the firm. While audit firms might use 3rd party specialists, this is not common practice, particularly for the large international audit firms which mainly use firm-employed specialists (e.g., PCAOB 2015a; Glover et al. 2017a). Thus, this study focuses on auditors' use of specialists employed by the audit firm.

The PCAOB inspection reports, responses to the PCAOB's staff consultation paper on the use of specialists, and qualitative research on auditor-specialist interactions all indicate that auditors experience challenges critically evaluating and integrating the evidence provided by specialists (e.g., Bratten, Gaynor, McDaniel, Montague, and Sierra 2013; Boritz et al. 2015; Harvest Investments 2015; PCAOB 2015b; Bauer and Estep 2016). There is limited empirical research, however, aimed at understanding possible causes for these challenges that auditors encounter, and potential strategies to improve auditors' critical evaluation and integration of the specialists' fieldwork and conclusions.[2] This study seeks to address this void in the literature by investigating whether prompting auditors to take the specialist's perspective improves their critical evaluation and integration of the specialist's evidence when the degree of complexity in the communication style of the specialists' report is high (hereafter "communication complexity", which refers to how technical language/jargon is presented).[3] Consistent with the prior literature in psychology and accounting (e.g., Davis, Conklin, Smith, and Luce 1996; Epley, Caruso, and Bazerman 2006; Church, Peytcheva, Yu, and Singtokul 2015; Hamilton 2016; Altiero, Kang, and Peecher 2016), perspective taking is an effortful and deliberate activity which requires auditors to consider the psychological view point of another in order to better understand the thoughts and motives of the specialist.

We focus on the high communication complexity scenario because prior research suggests that the significant knowledge gap between auditors and specialists, along with communication problems due to specialists' use of specialized technical language and jargon, create collaboration

[2] In the remainder of this paper, we refer to all documentation prepared by the specialist for the audit workpapers (e.g., specialist's report) as "specialist's evidence".

[3] Prior accounting studies related to readability, based on the SEC's Plain English Handbook (SEC 1998), (e.g., Rennekamp 2012; Tan, Wang, and Zhou 2014, 2015; Asay, Elliott, and Rennekamp 2016; Loughran and McDonald 2016; Koonce, Leitter, and White 2016) have investigated differences in linguistic features (e.g., sentence length, syntax, active voice, hidden verbs, superfluous words, etc.) and format features (e.g., headings/hierarchy, layout, tables, bullet points, etc.) of companies' financial disclosures and analysts' reports. Per the Plain English Handbook (SEC 1998), use of technical jargon hinders the readability of written communication, and thus should be avoided. The current study explores a situation in which technical language is frequently used and required, and thus not avoidable. Therefore, as validated in post-hoc analyses, communication complexity in our study holds the extent of technical language/jargon used (i.e., feature of readability) constant while only manipulating how the technical information is presented in the specialist's report.

challenges between auditors and specialists which can have a detrimental impact on audit quality (Bauer and Estep 2014; Boritz et al. 2015; Griffith 2016a; Bauer and Estep 2016). Further, we focus on written communication between auditors and specialists because these two groups communicate with each other primarily through memos and written reports (Boritz et al. 2015; Griffith 2016b).[4]

We apply psychology and marketing research (Petty and Cacioppo 1986; Lowrey 1998; Bradley and Meeds 2002), to posit that a highly complex specialist's report will impair auditors' ability to critically evaluate and integrate the specialist's evidence. Based on research on the cognitive processing of highly technical expert advice (e.g., Parker, Atkins, and Axtell 2008; Yaniv and Choshen-Hillel 2012), and extending prior findings of perspective taking in accounting (e.g. Church et al. 2015; Hamilton 2016; Altiero et al. 2016), we predict that taking the specialist's perspective will help auditors to critically evaluate and integrate the specialist's evidence. In particular, because auditors face more challenges critically evaluating and integrating the specialist's evidence in high communication complexity settings, we anticipate that perspective taking will be more effective when the specialist's communication complexity is high than when it is low.

We address our research questions in an experiment with in-charge (senior) level audit participants who have experience working with and using specialists' evidence. Our research design holds readability of the specialist's evidence constant while manipulating the level of communication complexity in the specialist's report (low vs. high) and the perspective taken by the auditor (auditor vs. specialist) when examining the specialist's evidence in a fair value context (i.e., Trade Names account impairment). The auditor's critical evaluation and integration of the evidence in the specialist's report is measured as auditor's preliminary assessment prior to completion of substantive

[4] Griffith (2016a) notes that audit teams use specialists' work in their final conclusions and documentation. Specialists summarize their work in a conclusion memo which is included in the audit file as documentation of the specialists' work. Memos are critical to the audit documentation required by the PCAOB. Similarly, Boritz et al. (2015, 38) observe: "The audit appears to have become a collection of modular tasks performed by various team members and specialists who accept each other's work at face value and file it in a memo or other working paper format to the audit file."

testing of the client's estimate (the assessed likelihood of an asset impairment and an audit adjustment) and the propensity to perform follow-up work (number of questions directed to the specialists and additional hours assigned to test the client's estimate). We use the experimental setting to control for variables often confounded in the natural environment. For example, because PCAOB inspections target high risk areas on high risk engagements, the complexity of the audit area and the communication complexity of the specialist's report are likely correlated on the engagements that are the basis of the PCAOB's inspection findings. Thus, it is unclear to what extent the specialist's communication complexity hinders auditors' ability to critically evaluate and integrate the specialist's evidence in the natural setting.

Consistent with the theoretical expectations, auditors demonstrate lower critical evaluation and integration of the specialist's evidence when communication complexity is high compared to when it is low in settings where auditors maintained an auditor perspective. Moreover, when auditors adopt the specialist's perspective prior to reviewing the high communication complexity specialist's report, their judgments and decisions are consistent with higher critical evaluation and integration of the evidence than the status quo (i.e., maintaining the auditor's perspective). That is, auditors prompted to take the specialist's perspective assessed a higher likelihood of impairment and audit adjustment to the client's balance than those who maintained an auditor's perspective. Importantly, our analyses of participants' qualitative responses provide evidence that perspective taking led to improved critical evaluation and integration of the specialist's expert advice in the high communication complexity setting. We also find that when the communication complexity is high, taking the specialist's perspective increased the likelihood that auditors would perform additional follow-up work – more follow-up questions for the specialist and more audit effort budgeted to test the specialist's evidence. These judgments reflect the types of actions that regulators and auditors believe are important to improving audit quality when specialists are used on audit engagements (e.g., PCAOB 2015b; Boritz et al. 2015).

Our study makes key contributions to the literature. First, we contribute to the growing research investigating potential sources of the challenges auditors encounter when working with evidence produced by specialists (e.g., Joe, Vandervelde, and Wu 2016; Griffith 2016b; Pyzoha, Taylor, and Wu 2016). Recent surveys of auditors and specialists suggest that communication issues is a key factor hindering auditors' evaluation and use of the specialist's evidence (Bauer and Estep 2014, 2016; Boritz et al. 2015; Griffith 2016a). However, to our knowledge, this is the first study to identify and provide systematic empirical evidence demonstrating that communication complexity in the specialist's report is a potential root cause of the communication issues auditors and specialists encounter when working in cross-functional teams. Second, we investigate one intervention (i.e., perspective taking) that auditors can employ to improve their critical evaluation and integration of the specialist's evidence. Academic studies to date have mostly focused on the problems auditors encounter when evaluating their clients' fair value measurements (hereafter "FVM(s)") and using the specialist's work (e.g., Joe et al. 2016; Cannon and Bedard 2016; Glover et al. 2017a, 2017b), but have given less emphasis to examining effective strategies to improve auditors' use and reliance on FV audit evidence (e.g., Pyzoha et al. 2016). Third, we extend the perspective taking literature in accounting by investigating the context where auditors are at an expertise disadvantage and in an advice-taking position. Earlier studies find that taking the perspective of management and investors can improve certain aspects of auditors' judgments (i.e., materiality judgments and assessment of misstatements). (e.g., Church et al. 2015; Hamilton 2016; Altiero et al. 2016). This study provides new evidence that perspective taking can improve auditors' collaboration with experts and between cross-functional teams in auditing settings.

Our findings have important implications for regulators, audit firms, auditors, and specialists. Demonstrating that perspective taking can be a worthwhile strategy to improve auditors' critical evaluation is relevant for U.S. and international regulators because while they highlight deficiencies in auditors' use of specialist's evidence, they have not offered strategies or techniques to help

auditors overcome these deficiencies. Further, our findings of how auditors' critical evaluation of the specialist's evidence can be improved should be of interest to the PCAOB because it notes that complex transactions which require the specialist's expertise are likely the areas of financial reporting that are susceptible to material misstatement (PCAOB 2015b). Last, our results have implications for cross-functional teams in professional service firms and geographically distributed teams who must collaborate on joint projects (e.g., see Hanes 2013; Downey and Bedard 2016). These theory-consistent findings suggest that having professionals adopt each other's perspective can improve the integration of the work product, and thereby improve the overall quality of the services being provided to clients.

II. BACKGROUND AND HYPOTHESES DEVELOPMENT

Auditor-Specialist Interactions and the Specialist's Report

The PCAOB recently reported that approximately 90 percent of the teams in inspected audits of registered international accounting firms utilized at least one type of specialist. Of these specialists, the type most frequently used were those employed by audit firms (PCAOB 2015b).[5] Auditor-employed specialists are typically involved in supporting the financial statements audit on an ad hoc basis, during various phases, and often are not seen as part of the core audit team (e.g., Boritz et al. 2015; Bauer and Estep 2016; Griffith 2016a). Consequently, the organizational structure of audit firms, differences in the timing when specialists are involved in the audit, and the fact that specialists are typically sourced from non-assurance groups, create conflicts between auditors and specialists that impede auditors' critical analysis and integration of the specialist's work (Boritz et al. 2015).

[5] These specialists have expertise in non-accounting areas (e.g., valuation, information technology, actuarial, etc.) and differ from technical audit specialists (e.g., Danos, Eichenseher, and Holt 1989; Salterio and Denham 1997), who have expertise in complex accounting and auditing issues, and are core audit team members. Recent research on auditors' use of specialists focuses on situations where auditors are advice-seekers and lack the knowledge or expertise of the specialist (Bauer and Estep 2014, 2016; Boritz et al. 2015; Griffith 2016a).

The functional separation between the core audit team and specialists also creates communication and collaboration challenges that are potential root causes of the audit deficiencies related to auditors' use of specialists (e.g., Bauer and Estep 2014, 2016; Boritz et al. 2015; Griffith 2016a). Recent survey and interview evidence suggest that these collaboration issues may be due in part to the communication complexity and use of distinct technical language by each of these professional groups (i.e., auditors and specialists), thus limiting their ability to understand the other's perspective, and results in inadequate critical analysis and integration of the specialist's work on the audit (Bauer and Estep 2014; Boritz et al. 2015; Griffith 2016a). For example, Griffith (2016a) observes instances where auditors do not fully understand the specialists' work resulting in reliance on the specialists' work without review.

Communication Complexity in the Specialist's Report

The typical specialist's report on an audit conveys the specialist's responsibilities, work performed, results and conclusions, and recommendations/concerns. Psychology, psycholinguistic[6], and marketing research suggests that the way technical language and jargon are presented affects the degree of complexity in the communication style of a message (Lowrey 1998; Bradley and Meeds 2004). The prior literature finds that technical terms help readers "form a more concrete semantic representation if they are presented in such a way that they can be comprehended. Simply thrown at the reader *en masse*, however, technical terms become jargon and are likely to prevent the reader from forming a concrete representation" (Bradley and Meeds 2004, 292). We reviewed numerous specialists' reports and observed that the level of complexity in the presentation of the technical information in the specialists' reports varies widely. Consistent with Bradley and Meeds' (2004) portrayal of the extremes in presenting technical terms, our review of specialists' reports finds that the lower-complexity reports present technical terms and their definitions within the primary text,

[6] Psycholinguistics is the study of the use and understanding of language, and the comprehension of text (Lowrey 1998).

and limit the use of acronyms. Higher complexity reports, on the other hand, include technical terms and acronyms that are presented *en masse* in an appendix or glossary at the end of the report.

The prior research suggests that the degree of communication complexity of a message can affect the processing of that message (Lowrey 1998; Bradley and Meeds 2002). In particular, marketing research on message persuasion applies the Elaboration Likelihood Model (ELM) as a theoretical framework to understand the effects of message complexity on cognition (Petty and Cacioppo 1986). In ELM, elaboration refers to the "extent to which a person thinks about the issue-relevant arguments contained in a message" (Petty and Cacioppo 1986, 128). Thus, when elaboration is high, individuals are motivated and able to "attend to the appeal [i.e., message]; access relevant associations, images, and experiences from memory; scrutinize and elaborate upon the externally provided message arguments in light of the associations available from memory; draw inferences about the merits of the arguments for a recommendation based upon their analyses; and consequently derive an overall evaluation of, or attitude toward, the recommendation" (Petty and Cacioppo 1986, 128).

The ELM posits that message complexity influences an individual's ability to process information, and in turn affects the level of cue elaboration (Lowrey 1998). The ELM predicts that messages that are communicated in a complex manner overload working memory, which results in a reduced ability to process the message, even when the individual is highly motivated to do so. Research finds that more complex syntax in advertisements requires more processing effort, which leads to lower information recall and increased negative reaction and attitudes towards the target brand or company (Lowrey 1998; Bradley and Meeds 2002). Further, consistent with the ELM, Lowrey (1998) finds that complex, scientific, or technical language impairs one's ability and motivation to process advertising information, thus leading to lower elaboration.

Applying the ELM to the use of specialists in auditing, we hypothesize that higher complexity in the communication style of the specialist's evidence will lead to reduced elaboration

by auditors when compared with lower complexity in the specialist's evidence. Consistent with ELM, we expect that this lower elaboration will occur even though auditors are highly motivated professionals. Lower elaboration due to high complexity in the specialist's evidence will reduce the auditor's ability to integrate and critically evaluate the specialist's work. Formally stated, when making judgments under the status quo (auditor perspective):

> **H1:** *Auditors will demonstrate judgments that are consistent with lower critical evaluation and integration when the level of communication complexity in the specialist's evidence is high than when it is low.*

Perspective Taking

Our expectation that auditors will experience difficulty critically evaluating and integrating specialists' evidence is consistent with prior psychology and organizational behavior research which finds that decision makers are often not deliberative when processing experts' opinions and advice (e.g., Todorov, Chaiken, and Henderson 2002; Bonaccio and Dalal 2006; Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). For example, some studies find that decision makers discount experts' advice and fail to fully consider such advice into their judgments and decisions (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). Other studies find that decision makers over-rely on the advice of experts (i.e., blindly trusting their advice), even when such experts are fallible (Giddens 1990; Todorov et al. 2002; Smith-Lacroix et al. 2012).

Research suggests that perspective taking, an effortful and deliberate activity, can be an effective technique to aid auditor's use of the expert's evidence because perspective taking has been shown to improve how decision makers process technical information and expert advice (e.g., Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). The psychology literature defines perspective taking as the "ability to entertain the psychological perspectives of others" (Davis et al. 1996, 713) and finds that it helps an individual to better understand the thoughts, motives, and feelings of another person or group (e.g., Parker et al. 2008). For example, perspective taking improves social interactions, conflict resolution, negotiations and collaboration (e.g., Davis et al. 1996; Epley et al.

2006), and it also reduces egocentrism and stereotyping (e.g., Galinsky and Moskowitz 2000; Galinsky and Mussweiler 2001; Savitsky, van Boven, Epley, and Wight 2005; Epley et al. 2006). Thus, this prior literature suggests that perspective taking can be effective in auditor collaborations with specialists and can influence auditors' critical evaluation and integration of expert evidence provided by specialists.

Psychology and organizational behavior research, for example, find that individuals who take the expert's perspective in advance of receiving highly technical expert advice are better able to incorporate the expert's advice into their decision-making (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). Perspective taking alters an individual's mode of processing of advice received from experts. Rather than starting with the decision-maker's own knowledge/opinions and then updating based on advice from the expert, perspective taking stimulates a more critical review and integration of all available information and advice collectively before arriving at a judgment and/or decision (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). Consideration of the expert's perspective enhances a decision-maker's critical evaluation and integration of the expert's advice because it makes the decision maker more likely to "give more equal consideration to all inputs and thus extract the information contained in advisory opinions more fully" than when perspective taking is not activated (Yaniv and Choshen-Hillel 2012, 1023). Research on teams also finds that perspective taking influences cognitive processing by increasing comprehensive evaluation of the advice presented, promoting information sharing, and facilitating interpersonal interactions, all of which leads to additional inquiry and/or more careful consideration of teammates' opinions (e.g., Dougherty 1992; Carlile 2002; Hoever, van Knippenberg, van Ginkel, and Barkema 2012).

In accounting, Altiero et al. (2016, Experiment 1) find that auditors who take the investor's perspective make appropriately lower materiality judgments than auditors who do not engage in

perspective taking when a relevant qualitative materiality factor is absent.[7] Similarly, in a fraud setting, Hamilton (2016) finds that auditors who consider the perspective of the manager responsible for a misstatement's occurrence made higher assessments that the misstatement is intentional when fraud risk is high than when it is low. In contrast, when auditors do not consider the client manager's perspective there is no difference in assessed intentionality, regardless of the level of fraud risk. Relatedly, in an experimental-economics market study, Church et al. (2015) find that having student participants adopt the role of a manager triggers perspective taking, and that perspective taking improves the quality of the participants' audit-related judgments about whether management's reported earnings are materially misstated.

Taken together, the prior accounting research suggests that perspective taking improves aspects of auditors' judgments when auditors take the perspective of management or investors to evaluate information for which they have higher or equal expertise. This study extends the literature by investigating perspective taking in a setting where auditors are at a distinct expertise disadvantage and one where close auditor-specialist collaboration is necessary for the successful completion of the audit task. Drawing on the literature analyzed above, we posit that perspective taking in this new context will improve auditors' ability to critically evaluate and integrate evidence from specialists when auditors are seeking advice from experts. We hypothesize that prompting auditors to adopt a specialist-centric perspective will mitigate the negative effect of high communication complexity in the specialist's report. Specifically, we hypothesize that instructing auditors to adopt the specialist's perspective will increase their critical evaluation and integration of the specialist's work. Formally:

> **H2:** *When communication complexity in the specialist's report is high, auditors who adopt a specialist's perspective will demonstrate judgments that are consistent with higher critical evaluation and integration than auditors who maintain the auditor's perspective.*

[7] However, they find that perspective taking did not improve auditors' materiality judgments when the relevant qualitative factor was present because taking the investor's perspective appeared to make auditors not only more aware of investor preferences but also management's desire to meet investors' expectations.

III. Method

Participants

Participants were 104 audit seniors from two "Big 4" firms.[8] The study was administered in two ways, conforming to the requirements of the participating firms: 78 participants completed the paper version during firm-wide training and 26 completed the online version via Qualtrics. Table 1 presents the participants' demographic information. The participants have an average of 2.86 years of public accounting experience, ranging from 2 to 6 years. As indicated on Table 1, the participants have the task-related experience and are at the experience level of auditors (i.e., seniors) who routinely perform FVM audit procedures, including evaluating assumptions and valuation methods for complex estimates (Griffith, Hammersley, Kadous, and Young 2015; Joe et al. 2016; Pyzoha et al. 2016). Our analysis (untabulated) reveals no systematic differences in the demographic variables across treatment conditions. Therefore, we conclude that there was satisfactory random assignment of participants to the treatment conditions. Moreover, neither the demographic variables nor type of administration (paper vs. online) are significant covariates for any of the models tested.

[INSERT TABLE 1 ABOUT HERE]

Experimental Task

The experiment had three parts. Part 1 operationalizes perspective taking by having the participants complete a FVM auditing task from either the auditor's or specialist's perspective. The task and client (Estately) used in the perspective taking manipulation are completely unrelated to Beta Inc., the audit client and focus of this study. The Part 1 task required participants to evaluate whether a private equity investment should be disclosed as a Level 2 or Level 3 asset per the ASC 820 fair value leveling hierarchy. Part 2, the primary focus of the current study, requires participants

[8] Our final sample of 104 eliminates 27 participants whose timing indicates insufficient attention to the experiment (i.e., a completion time of 15 minutes or less or more than 2 hours [typical completion time was 35 – 45 mins]); and 17 participants whose manipulation check responses were at the opposite end of the response scale from their assigned treatment conditions. The pattern of the results and the inferences from our hypothesis tests are similar if we include participants who failed the manipulation checks.

to evaluate the FVMs of the hypothetical client's (Beta's) Trade Names account to assess the likelihood that the account is impaired and requires an audit adjustment, and then decide whether follow-up actions are necessary. Part 2 also features our manipulation of the second independent variable, communication complexity (which we discuss below). Finally, in Part 3, participants who indicated that follow-up actions are required for the Beta Trade Names account selected the questions to be posed to the specialist, the follow-up audit procedures and the hours for the procedures.

In Part 1 of the study, participants are told that the client, Estately, owns common stock in a privately-held niche personal leather goods retailer, Velzi, and has elected to account for its Velzi investment at fair value. Taking the perspective of either an auditor or a specialist, the participants: 1) listed key factors that influenced their ASC 820 leveling judgment (Level 2 or 3); 2) prepared a conclusion paragraph for the FV classification memo; 3) rated the quality of a Level 2 and Level 3 accounting treatment; and 4) listed two issues they consider when working with specialists or auditors depending on the perspective treatment group assigned.

Part 2 instructs participants that they are in-charge auditors for the audit of Beta, Inc., a publicly-traded company. Their task is to complete year-end substantive testing of one of the company's material intangible assets – Trade Names. Background information indicates that Beta Inc. is a manufacturing company, has been a client for 11 years, has had no history of significant issues or disputes with the auditor, and has always received unqualified audit opinions. Financial information provided includes total assets, liabilities, revenue, net income and the total amount of intangibles at current year-end. Participants were informed that the Trade Names account is material, and that the client engaged a 3rd party valuation specialist to value the Trade Names.

Following the background information, participants reviewed information about the audit procedures and evaluations that were already completed by the audit team. Their task was to evaluate the reasonableness of the remaining assumptions in the valuation model and of the estimate taken as

a whole. The participants were told they would receive assistance from the audit firm's specialists.[9] Next, participants reviewed the audit workpapers showing Beta's specialist's estimate of the Trade Names followed by an excerpt from the auditor's specialist report. After reviewing the auditor's specialist's report, participants assessed the likelihood of impairment and the likelihood that an audit adjustment would be required for the Trade Names account. The participant's final decision in Part 2 was to determine whether or not to perform additional follow-up work on the Trade Names account.

The task in Part 3 varied depending on whether the participants selected "yes" or "no" to the additional follow-up procedures question in Part 2. Participants responding "yes" reviewed a list of potential follow-up questions, selected the questions to be posed to their specialist, selected additional procedures to be performed from the list of procedures provided, and indicated the amount of hours to be allocated to the audit procedures they had selected. Participants who selected "no" to the additional follow-up procedures, completed a filler task designed to require the equivalent amount of time to complete as the tasks in the "yes" option.[10] The experiment concluded with a post-experimental questionnaire. Figure 1 presents the sequential flow of the experimental procedures.

[INSERT FIGURE 1 ABOUT HERE]

Big 4 and non-Big 4 FV audit experts assisted in preparing the experimental materials, including the follow-up audit procedures and questions for the specialist, to ensure they were realistic and free of inaccuracies. In addition, the final instrument incorporated feedback from national partners with FV expertise who are technical and quality assurance experts at the participating firms. Further, the Beta Inc. facts and workpapers are adapted from training materials based on a real client, and the specialist's report was adapted from an actual report prepared by Big 4 firm-employed

[9] Our use of a specialist employed by the firm is consistent with recent findings from qualitative studies that these specialists are most often used by audit teams to assist in testing the most challenging and subjective aspects of auditing FVMs (e.g., evaluate reasonableness of assumptions and models) (e.g., Cannon and Bedard 2016; Glover et al. 2017a).

[10] To ensure that participants' decisions to perform follow-up work and question the specialist were not motivated by a desire to complete the experiment as soon as possible, the instrument stated: "the amount of time required to complete the remainder of this study is the same, whether you respond "Yes" or "No" to this [follow-up] question."

specialists. Participants' mean rating (7.55) confirms the case is realistic (i.e., significantly above the midpoint (6) of a scale, where 1 = not at all realistic and 11= very realistic, $t_{(103)} = 9.06$, $p<0.001$).

Experimental Design

Independent Variables

We use a 2 x 2, between-subjects design, which varies the level of communication complexity (*Complexity*) in the employed-specialist's report (low vs. high) and the *Perspective* (auditor vs. specialist) adopted by participants prior to reviewing the specialist's report. We manipulate *Complexity* by varying the complexity of the presentation of the technical information in the specialist's report (Refer to Appendix A for examples). In both conditions, the excerpt of the specialist's report includes a summary of the work performed, the conclusions on the assumptions being evaluated, and the uncertainties related to those assumptions. The specialist's report expresses reservations (details presented below), but ultimately concludes that the assumptions are within a reasonable range. In the low *Complexity* condition, the specialist's report incorporates the technical terms and their definitions within the body of the report and there is minimal use of acronyms. In the high *Complexity* condition, the technical terms and acronyms (e.g., WACC, LTGR, PFI, etc.) are not defined and incorporated in the body of the report. Instead, all technical terms are presented in a separate "Business Valuation Glossary" at the end of the report. FV audit experts and specialists at Big 4 audit firms reviewed the reports to determine that the information presented in both specialists' reports are equivalent. Further, these differences in communication style mirror the differences we observed in specialists' reports taken from actual audit engagements.

The second independent variable, *Perspective*, is manipulated at two levels – specialist perspective and auditor perspective. Our perspective taking manipulation (described in the experimental task above) was adapted from Altiero et al. (2016) and is consistent with the manipulation used in the psychology and organizational behavior literature (e.g., Litchfield and Gentry 2010; Hoever et al. 2012; Tarrant, Calitri, and Weston 2012). In the specialist perspective

condition, participants are instructed to "put yourself in the shoes of a specialist employed by your audit firm to assist auditors in their year-end testing of the client's fair value estimates" when answering questions related to the ASC 820 classification (Part 1 of the experiment). Alternatively, in the auditor perspective condition (i.e., no perspective-taking), participants were simply told to assume the role of an in-charge auditor when completing the ASC 820 classification tasks. Consistent with prior literature (e.g., Altiero et al. 2016), the auditor perspective is *status quo* for the participants, therefore, instructions to think like an auditor would be redundant and artificial (Refer to Appendix B for excerpts of the *Perspective* manipulation).

Dependent Variables

We use two sets of dependent variables to capture participants' critical evaluation and integration of the information presented in the specialist's evidence: (1) assessments related to the reasonableness of the client's FV estimate, and (2) extent of follow-up activity related to the specialist's evidence. The specialist's report expresses reservations about the assumptions for the royalty rate and projected revenues, which are material inputs to the client's FV estimate. Specifically, on the royalty rate, the specialist states that "using this Profit Split Method could potentially yield a lower fair value", and for the projected revenues states that "given our knowledge of the industry, it is possible that revenue growth could decline after the next few years." In addition, the specialist's report notes that the royalty and long-term growth rates are on the higher end, while the discount rate is on the lower end, of the acceptable range for each of these assumptions. All of these factors indicate a potentially aggressive estimate that would be more likely to result in an impairment charge. Accordingly, after they review the audit workpapers and specialist's report, participants make two preliminary assessments of Beta's Trade Names FV estimate.[11] First,

[11] Given that the auditor's specialist has reservations regarding key assumptions used by Beta Inc., which suggest aggressive management estimation, a higher likelihood of impairment and audit adjustment represent a higher quality audit judgment reflecting that auditors are better able to critically evaluate and integrate the specialist's evidence.

participants assessed the likelihood that the Beta Inc. Trade Names account is impaired (*Impaired*) as of the current year-end using a scale (where 0% = "absolutely not impaired" and 100% = "absolutely impaired"). Second, participants indicated their likelihood of recommending an audit adjustment (*Adjustment*) for the Beta Inc. Trade Names account as of the current year-end based on a scale, where 0% = "absolutely no adjustment" and 100% = "absolutely an adjustment."

Our measure of participants' willingness to follow-up on the information presented in the auditor's specialist report includes: 1) a dichotomous variable (yes or no) indicating whether participants would perform additional procedures prior to making a final conclusion about Beta's Trade Names (*Followup*); 2) the number of questions for the specialists selected from a list of seven questions (*Numquestions*); and 3) the extent of testing indicated by the amount of hours (0 to 12) allocated for additional procedures selected from a list of audit procedures to be applied on the Trade Names Account (*Hrsallocated*).[12] See Appendix C for examples of available questions and procedures.

IV. RESULTS

Manipulation Checks

Recall that *Complexity* was varied at two levels (low vs. high) based on the presentation of the technical terms in the auditor's specialist report. We evaluate the effectiveness of this manipulation based on participants' responses to two questions: 1) "In terms of the communication style of the report that was prepared by your Firm's valuation specialist for Beta, Inc, what is your assessment of the complexity of the report?" and 2) "Assess the level of technical jargon/language used in your Firm's specialist's report on the Beta engagement." The response scale for both questions was anchored at end points where 1= low and 11= high. Factor analysis (principal factor method) indicated that the two questions loaded on one factor with factor loadings greater than

[12] As noted earlier, FV experts from both Big 4 and non-Big 4 firms validated the materials and follow-up options. Participants also had the option of writing in "other" questions and "other" audit procedures.

0.70.[13] Therefore, we use the mean response to the two questions to analyze the *Complexity* manipulation. The mean combined rating in the two treatment conditions (5.48 in low complexity vs. 6.11 in high complexity) was statistically different ($t_{(102)} = 2.01$, $p = 0.023$, one-tailed). In addition, the mean perceived complexity rating in the low *Complexity* condition (5.48) was significantly lower than the midpoint (6) of the scale ($t_{(49)} = -2.49$, $p = 0.02$) but the mean perceived complexity (6.11) in the high *Complexity* condition did not differ ($t_{(53)} = 0.46$, $p = 0.64$) from the midpoint of the scale. Thus, participants perceived the low *Complexity* condition to be low and the high *Complexity* condition to be moderate/high. Taken together, these results indicate a successful *Complexity* manipulation.

To assess the effectiveness of our manipulation of the *Perspective* independent variable (auditor vs. specialist), we analyzed participants' rating of the extent to which they considered the valuation specialist's perspective when completing the conclusion memo for the Estately audit (Part 1) based on an 11-point scale (where 1 = "I did not consider it at all" [i.e., auditor perspective] and 11 = "I gave it a great deal of consideration" [i.e., specialist perspective]). The difference in the mean ratings of the two perspective taking conditions (5.25 in the Auditor vs. 7.67 in the Specialist) was statistically significant ($t_{(102)} = 4.98$, $p < 0.001$, one-tailed) indicating a successful *Perspective* manipulation.

Hypotheses Tests

Hypotheses 1 and 2 predict specialized constrasts. Although we do not predict an overall interaction, taken together, our hypotheses imply an interactive effect. Thus, for completeness, we conduct ANOVA tests of the overall model prior to planned contrast analyses to test our hypotheses. Panel A of Table 2 presents the mean and standard deviation for the participants' assessments of the likelihood of an impairment (*Impaired*) and an audit adjustment (*Adjustment*) for the Trade Names

[13] Note that separate analyses of each question also yield statistically significant differences in complexity ratings between the low and high *Complexity* conditions that indicate a successful manipulation.

account by treatment condition. Recall that the specialist's report indicated management's assumptions on the inputs to the FV model were potentially aggressive. Therefore, lower (higher) critical evaluation and integration of the specialist's evidence would lead to lower (higher) assessments of impairment and adjustment. Panels A and B of Figure 2 display the pattern of the means across treatment conditions for *Impaired* and *Adjustment*, respectively. As presented in Table 2 panels B and D, the interaction of *Complexity* and *Perspective* is statistically significant at the 5% and 10% levels for the *Impaired* ($F_{(1, 100)} = 4.08$, $p = 0.046$, two-tailed) and *Adjustment* ($F_{(1, 99)} = 2.96$, $p = 0.088$, two-tailed) variables, respectively.[14]

[INSERT FIGURE 2 ABOUT HERE]

H1 predicts that when the auditor perspective is maintained, there will be less critical evaluation and integration in the high *Complexity* condition than the low *Complexity* condition. As indicated in Table 2 Panels A and C, in the auditor *Perspective* condition the mean *Impaired* assessment when *Complexity* is low (41.43) is significantly higher than the mean *Impaired* assessment when *Complexity* is high (28.00), $F_{(1, 100)} = 4.47$, $p = 0.019$, one-tailed.[15] Similarly, Table 2 Panels A and E indicate that the mean for *Adjustment* in the low *Complexity* condition (34.28) is significantly higher than the mean when *Complexity* is high (23.50), $F_{(1, 99)} = 2.49$, $p = 0.059$, one-tailed. Thus, results for the two assessment judgments are consistent with H1.

[INSERT TABLE 2 ABOUT HERE]

Next we consider how *Complexity* and *Perspective* influence the pattern of results for participants' follow-up decisions (i.e., *Followup, Numquestions,* and *Hrsallocated*). Figure 3 presents the pattern of means across the four treatment conditions for *Followup* while Panels A and B of Figure 4 show the pattern of results for *Numquestions* and *Hrsallocated*, respectively. We conduct

[14] MANOVA analysis with *Impaired* and *Adjustment* as dependent variables yields substantially the same results for H1 and H2 at 5% significance level, one-tailed.

[15] We tested to see if any demographic variable is a significant covariate variable. None of the demographic variables were significant as covariates for *Impaired* and *Adjustment* as the dependent variables.

Logit/Chi Square analyses for *Followup,* a dichotomous variable[16] and ANOVA analyses for *Numquestions* and *Hrsallocated,* the continuous variables. Table 3 Panel B presents the logistic regression results indicating that the overall interaction model is not significant for *Followup* (Wald's $\chi^2_{(1, 100)} = 0.80$; $p = 0.426$, two-tailed). However, as Table 4 Panels B and D present, the overall interaction in the ANOVA models is significant for *Numquestions* ($F_{(1, 60)} = 3.39$, $p = 0.070$, two-tailed) at the 10% level and *Hrsallocated* ($F_{(1, 55)} = 4.67$, $p = 0.035$, two-tailed) at the 5% level. These results indicate that together *Perspective* and *Complexity* do not have a systematic effect on the full sample of participants (N = 104), but do have an effect on the subsample of participants who engaged in follow-up activity (N = 64).

Next we test H1 by analyzing participants' follow-up decisions. As shown in Table 3, Panel C, simple effects analysis indicates that Auditor *Perspective* results in a lower level of *Followup* when *Complexity* is high (45%) than when it is low (68%) at the 10% significance level ($\chi^2_{(1, 100)} = 2.46$, $p = 0.059$, one-tailed). For the subsample of participants who decided to engage in follow-up activity, both *Numquestions* and *Hrsallocated* are significantly lower at the 10% and 5% significance levels, respectively, $F_{(1, 60)} = 1.76$, $p = 0.094$, one-tailed (Table 4 Panel C) and $F_{(1, 55)} = 4.50$, $p = 0.020$, one-tailed (Table 4 Panel E) when *Complexity* is high than when *Complexity* is low. Collectively, the results for the follow-up measures are consistent with H1 for participants who choose to follow-up on the specialist's report.

[INSERT FIGURES 3 & 4 ABOUT HERE]

[16] We performed analyses to determine if any of our demographic variables are significant covariates. None of the demographic variables were significant as covariates, except for *Comfortable*, or how comfortable participants are in general with approaching their firm's specialists, *Power*, or to what extent participants feel in-house specialists have more power or control in their working relationships and *Experience*, or the extent of their experience working with in-house specialists, all of which were significant as covariates only in the analysis of *Followup*. However, inclusion of all of these variables together or each separately into an ANCOVA analysis of *Followup* yields the same significant pattern of results. Therefore, we only report logistic regression results for *Followup* without these covariates.

Recall that H2 predicts that when *Complexity* is high, taking the specialist's perspective will result in higher critical evaluation and integration of the specialist's evidence than when auditors maintain the auditor perspective. Recall also that higher critical evaluation and integration are consistent with higher likelihood assessments of impairment and audit adjustment. To formally test H2, we perform simple effects analysis to examine the effect of *Perspective* on *Impaired* and *Adjustment* when *Complexity* is high. Consistent with our expectations, the simple effects tests presented in Panel C of Table 2 show a significant effect of *Perspective* on *Impaired* when *Complexity* is high at the 5% significance level ($F_{(1, 100)} = 3.05$, $p = 0.042$, one-tailed). Similarly, Panel E of Table 2 indicates that the effect of *Perspective* on *Adjustment* given high *Complexity* is significant at the 10% level ($F_{(1, 99)} = 2.32$, $p = 0.065$, one-tailed). Also note that *Perspective* does not have a significant impact on auditor judgments in the low *Complexity* condition because auditors are able to critically evaluate and integrate low complexity evidence without the aid of an intervention ($F_{(1,100)}=1.24$ (*Impaired* - Panel C of Table 2) and $F_{(1,99)}=0.81$ (*Adjustment* - Panel E of Table 2) $p >$ 0.20, two-tailed comparisons). Collectively, our results for *Impaired* and *Adjustment* support H2.

Table 3 presents the tests of H2 focusing on participants' follow-up decisions. As shown in Panel C, the effect of *Perspective* given high *Complexity* is not significant for the follow-up decisions of the entire sample of participants (*Followup* $\chi^2_{(1, 100)}=1.42$, $p = 0.117$, one-tailed). However, for the subsample of auditors who decided to engage in follow-up activity, we find, consistent with H2, the simple effects tests presented in Panel C of Table 4 for *Numquestions* reveal a significant effect of *Perspective* when *Complexity* is high at the 5% level ($F_{(1, 60)} = 5.15$, $p = 0.013$, one-tailed). Similarly, Table 4 Panel E indicates a statistically significant effect of *Perspective* given high *Complexity* for *Hrsallocated* at the 5% level ($F_{(1, 55)} = 2.88$, $p = 0.048$, one-tailed). Further, we observe that in the low *Complexity* condition, *Perspective* taking is not statistically significant, $F_{(1, 60)}=0.04$ and $F_{(1, 55)}=1.80$ ($p > 0.10$, two-tailed) for *Numquestions and Hrsallocated*, respectively. Together, for

auditors who choose to engage in follow-up, perspective taking resulted in follow-up decisions (number of questions asked and the amount of time allocated to additional procedures) that are consistent with higher levels of critical evaluation and integration of the specialist's evidence.

[INSERT TABLES 3 & 4 ABOUT HERE]

In sum, these results provide evidence that auditors who maintain the auditor *Perspective* exhibit lower critical evaluation and integration when *Complexity* is high than when it is low. However, instructing auditors to adopt a specialist's perspective when the communication *Complexity* of the specialist's report is high, results show that auditors exhibit higher critical evaluation and integration of the specialist's evidence than when auditors maintain the auditor-centric perspective. We further observe that auditors who chose to follow-up on issues raised in the specialist's report achieved greater benefits from perspective taking as manifested by asking more questions and pursuing additional evidence to resolve the concerns documented in the specialist's report.

Additional Analysis - Evaluating Perspective Taking

H2 posits a theoretical link whereby taking the specialist's perspective leads to improved auditor judgment through enhanced elaboration - increased critical evaluation and integration – of the specialist's evidence. Accordingly, our research design anticipates that the specialist's perspective taking manipulation in the Part 1 task (ASC 820 leveling judgment) results in higher critical evaluation and integration of the specialist's evidence during the Part 2 task (impairment testing). To assess the effectiveness of the perspective taking manipulation when the *Complexity* of the specialist's report is high, we analyze participants' responses to the open-ended question: "Briefly list the top 3-5 factors that most influenced your judgments on the likelihood of impairment and an audit adjustment for Beta Inc."

Table 5 reports the qualitative results for the two *Perspective* conditions when *Complexity* is high. Qualitative responses were coded independently into three levels (low, moderate, high) of

critical evaluation and integration of the specialist's evidence by one author and another coder, a graduate assistant with Big 4 internship experience who had no knowledge of the study's objectives.[17] The Kappa score for interrater reliability is 0.82, which indicates that the independent coding is highly reliable (Landis and Koch 1977). Relying on theory (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012), we expect that the proportion of participants demonstrating lower and higher levels of critical evaluation and integration of the specialist's evidence will be significantly different in the auditor versus specialist *Perspective* conditions. However, we do not anticipate significant differences in participants' responses classified as "moderate level" (i.e., medium) across the two *Perspective* conditions because perspective taking activates both critical evaluation and integration, and the moderate measure captures critical evaluation only but not integration (See further details in Table 5).

[INSERT TABLE 5 ABOUT HERE]

Consistent with theoretical expectations, results in Table 5 indicate that when *Complexity* is high, a greater proportion (47.06%) of participants in the specialist *Perspective* treatment group exhibited greater critical evaluation and integration of the specialist's evidence than the participants (20.00%) in the auditor *Perspective* treatment group (Pearson $\chi^2_{(1)} = 3.95$, $p = 0.047$).[18] Results also show that a higher proportion of participants in the auditor *Perspective* condition demonstrated a low level of critical evaluation and integration compared with those in the specialist *Perspective*

[17] Consistent with the literature, perspective taking allows the decision-makers to engage in deeper processing, integration, and better incorporation of the experts' advice (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012). Through discussions with FV experts about the key issues in the specialist's evidence that should be factored into auditors' impairment testing, two researchers developed classification rules for the participants' open-ended responses. Coders applied the coding rules independently and then met to reconcile differences. All coders were blind to the treatment conditions of the participants' responses at the time of coding. Refer to Table 5 for more details on the coding approach.

[18] When *Complexity* is low (untabulated), there was no significant difference, $p > 0.10$, across the two *Perspective* conditions in the proportion of participants which exhibited both critical evaluation and integration of the specialist's work (response frequency across all of the themes was not significantly different across perspectives). This is consistent with our main results that Perspective does not influence auditor judgments when *Complexity* is low since auditors are able to critically evaluate and integrate low complexity evidence presented in the specialist's report without the aid of an intervention.

condition (20.59% vs. 50.00%) (Pearson $\chi^2_{(1)} = 5.05$, $p = 0.025$). Finally, as expected, we find no difference in the frequency of participants exhibiting moderate critical evaluation and integration across the two *Perspective* conditions, (Pearson $\chi^2_{(1)} = 0.00$, $p = 0.959$). Thus, the analyses of qualitative responses provide additional evidence that adopting the specialist's perspective is effective in increasing auditors' critical evaluation and integration of the specialist's work with that of the audit team.

Sensitivity Analyses and Supplemental Analyses

We conduct supplemental analyses to validate the conclusions drawn from the tests of our hypotheses. First, we conduct tests to rule out the potential alternative explanation that the *Complexity* manipulation influenced the participants' perceived readability and understandability of the specialist's report. Participants assessed how readable and understandable the specialist's report was across the two levels of *Complexity*. Mean ratings by treatment condition, presented in Table 6 Panel A, indicate that perceived readability and understandability of the specialist's report do not differ across *Complexity* conditions (MANOVA effects all at $p > 0.10$, two-tailed). Second, the two *Complexity* conditions do not differ (composite means = 13.82 in the low vs. 12.42 in the high) when we apply widely used metrics (readability-score.com program) in the financial accounting literature: The Flesch-Kincaid Reading Ease Score and Grade Level Score, Gunning-Fog Score, Coleman-Liau Index, SMOG Index, and the Automated Readability Index (De Franco, Hope, Vyas and Zhou 2015). Therefore, we conclude that the differences in observed auditor judgments are not due to differences in participants' perceived understandability and readability of the valuation facts presented in the specialist's report across the two levels of *Complexity*.

[INSERT TABLE 6 ABOUT HERE]

We also conduct tests to rule out the possibility that our results are driven by participants having different perceptions about the reliability of the specialist due to varying the level of

Complexity in the specialist's report. Participants' post-experimental responses provide measures of their perceptions of the competence, reliability, and helpfulness of the specialist, and feelings that the specialist was a member of the audit team. Mean ratings (shown in Panel B of Table 6) by treatment condition for each of the four post-experimental questions indicate that perceptions of competence, reliability, helpfulness, and audit team membership do not differ across *Complexity* conditions (MANOVA effects all at $p > 0.10$, two-tailed). Therefore, we conclude that the observed effects are not driven by perceived differences about the quality or characteristics of the audit firm-employed specialist due to varying the level of *Complexity* in the specialist's report.

V. CONCLUSION

Regulators worldwide often charge, and field-based studies seem to confirm, that auditors encounter challenges critically evaluating and integrating complex evidence such as the work of auditors' specialists (e.g., PCAOB 2010, 2012a, 2014b, 2015a; IFIAR 2015; CPAB 2015a, 2015b; Boritz et al. 2015). Observations that auditors do not fully incorporate the specialist's evidence and neglect to follow-up on issues flagged in their specialist's reports are of concern to regulators and audit firms because they have potential implications for audit quality (e.g., IFIAR 2015; CPAB 2015a). This study examines whether high communication complexity in the specialist's report is a potential root cause for the collaboration challenges auditors face, and whether instructing auditors to adopt a specialist's perspective can enhance their critical evaluation and integration of the specialists' evidence. Identifying an effective strategy to improve auditors' use of the specialist's evidence is an important contribution because academic studies to date have largely focused on identifying the challenges auditors encounter when using specialists (Boritz et al. 2015; Cannon and Bedard 2016; Joe et al. 2016; Griffith 2016a; Glover et al. 2017a).

Recent qualitative studies suggest that poor communication between auditors and their specialists is a key factor contributing to the challenges auditors encounter when using the work of the specialists (Bauer and Estep 2014, 2016; Boritz et al. 2015; Griffith 2016a). Applying research

from psychology, psycholinguistic, and marketing (e.g., Lowrey 1998; Bradley and Meeds 2002), this study argues that communication complexity (i.e., how technical information is presented) contributes to auditors' difficulty in integrating and critically evaluating evidence provided by their specialists. Based on prior literature in psychology and organizational behavior, we test whether having auditors adopt the specialist's (expert's) perspective in advance of reviewing technical information in the specialists' reports improves auditors' critical evaluation and integration of the specialist's evidence (Yaniv and Milyavsky 2007; Yaniv and Choshen-Hillel 2012).

Consistent with theoretical expectations, when auditors maintain an auditor perspective (i.e., the status quo), their judgments demonstrate lower critical evaluation and integration of the specialist's evidence when communication complexity is high than when it is low across several indicators. These theory based findings also show that taking the specialist's perspective prior to reviewing a high communication complexity report leads to higher critical evaluation and integration of the specialist's evidence than maintaining an auditor's perspective (i.e., the status quo). Specifically, when the specialist's report indicating potentially aggressive assumptions in FV inputs was high in communication complexity, auditors who adopted the specialist's perspective had higher likelihood assessments for asset impairment and audit adjustment than auditors who maintained the auditor perspective. Notably, we find that while communication complexity and perspective taking did not have a systematic effect on follow-up decision-making for the full sample of auditors, for the subsample of auditors who chose to perform follow-up work, the effects of perspective taking were particularly beneficial. That is, focusing only on the auditors who opted to perform follow-up work, adopting a specialist's perspective before reviewing the high communication complexity specialist's report lead to more follow-up questions and increased audit effort on impairment testing versus maintaining an auditor's perspective. These follow-up activities are particularly relevant in addressing the concerns raised by researchers and regulators that auditors often fail to sufficiently and appropriately follow up on areas flagged by their specialists (PCAOB 2015b; Griffith 2016a;

Bauer and Estep 2016). Collectively, our results suggest that perspective taking can improve auditors' critical evaluation and integration of the specialist's work where communication complexity is high, and is particularly beneficial for auditors who opt to perform follow-up work.

Our research has important implications for the academic literature, regulators, audit firms, and specialists. First, we provide the first systematic evidence that the specialist's communication style in presenting technical information contributes to the challenges auditors encounter when evaluating the specialist's work and that when auditors take an expert's perspective it can improve their ability to interpret and evaluate complex evidence. In addition, we extend the literature exploring auditor-specialist interactions, which has previously relied on auditors' self-reports in surveys and interviews to identify communication as a root cause for audit deficiencies. We use a controlled experimental setting to establish that communication style (i.e., presentation of technical terms and jargon) contributes to auditor's inability to incorporate the specialist's evidence. Thus, this study responds directly to the call for more research on factors influencing auditors' use and evaluation of specialists' work (Bauer and Estep 2014; Boritz et al. 2015; Griffith 2016a). Second, our research is informative to specialists, whose goal is effective communication and better collaboration with auditors. That is, our results provide insight regarding how specialists can shape the presentation of their findings to improve collaboration with the core audit team. Third, this study is also relevant to regulators interested in developing strategies to address auditors' overreliance on the work of specialists - an area that is often cited as contributing to audit deficiencies in inspection reports (e.g., PCAOB 2008, 2010, 2011, 2012a, 2012b, 2014b-d; Bratten, Gaynor, McDaniel, Montague, and Sierra 2013; IFIAR 2015; CPAB 2015a).

For audit firms, this study illustrates that perspective taking - a simple, cost-effective, and easily implemented intervention can be adopted to improve auditors' integration and critical evaluation of the specialist's work. Overall, our research suggests that perspective taking has the potential to improve product quality in professional service firms whenever cross-functional teams

must collaborate on joint projects. This study also has implications for group audits where the lead auditor and component auditors often experience coordination and communication problems (Hanes 2013; Downey and Bedard 2016). Moreover, while our study examines external auditors' work with specialists, a recent survey suggests our findings can be applied to enhance collaboration between external and internal auditors. In a joint report, the Center for Audit Quality (CAQ) and the Institute of Internal Auditors (The IIA) highlighted communication and coordination concerns as a source of collaboration problems between internal and external auditors (CAQ and IIA 2015).

This study is subject to limitations, which present opportunities for future research. First, our experimental setting focuses on only one specialist type - valuation specialists, and auditors' use of employed specialists. Future research can explore the effectiveness of perspective taking in addressing communication and other integration challenges auditors encounter with various types of experts. Second, our research design features follow-up activity (additional questions and additional procedures) as indicative of improved audit quality. Although our conceptual approach is consistent with the types of actions that regulators and audit professionals judge to be necessary to improving audit quality on audit engagements involving specialists (Bauer and Estep 2014; CPAB 2015a; PCAOB 2015b; Boritz et al. 2015), we cannot make claims about the efficiency-effectiveness tradeoff of the additional follow-up activity selected by auditors. Future research can evaluate the efficiency-effectiveness trade-off in auditor's critical evaluation and integration of the specialist's work.

REFERENCES

Altiero, E., Y.J. Kang, and M. Peecher. 2016. *The Investor Perspective and its Influence on Auditor Materiality Judgments*. Working paper, University of Central Florida, University of Illinois at Urbana-Champaign, and University of Massachusetts, Amherst.

American Institute of Public Accountants (AICPA). 1994. *AU Section 336 Using the Work of a Specialist.* Now PCAOB AS 1210 Available at: https://pcaobus.org/Standards/Auditing/Pages/AS1210.aspx

Asay, H. S., W. B. Elliott, and K. Rennekamp. 2016. Disclosure readability and the sensitivity of investors' valuation judgments to outside Information. *The Accounting Review* (forthcoming)

Bauer, T. and C. Estep. 2014. *The IT Auditor Function on Financial Statement and Integrated Audits: Description of Practice and Avenues for Future Research*. Working paper, University of Illinois at Urbana Champaign.

Bauer, T. and C. Estep. 2016. *One Team or Two? Investigating Relationship Quality between Auditors and IT Specialists: Implications for Audit Team Identity and the Audit Process*. Working paper, University of Illinois at Urbana-Champaign and Emory University.

Bonaccio, S., and R. S. Dalal. 2006. Advice taking and decision-making: An integrative literature review, and implications for the organizational sciences. *Organizational Behavior and Human Decision Processes* 101: 127–151.

Boritz, J., L. Robinson, C. Wong, and N. Kochetova-Kozloski. 2015. *Use of Specialists During an Audit*. Working paper, University of Waterloo and Saint Mary's University, Canada.

Bradley, S. D., and R. Meeds. 2002. Surface-structure transformations and advertising slogans: The case for moderate syntactic complexity. *Psychology & Marketing* 19 (7-8): 595–619.

Bradley, S. D., and R. Meeds. 2004. The effects of sentence-level context, prior word knowledge, and need for cognition on information processing of technical language in print ads. *Journal of Consumer Psychology* 14 (3): 291–302.

Bratten, B., L. M. Gaynor, L. McDaniel, N. R. Montague, and G. E. Sierra. 2013. The audit of fair values and other estimates: The effects of underlying environmental, task, and auditor-specific factors. *Auditing: A Journal of Practice & Theory* 32 (Supplement 1): 7–44.

Canadian Public Accountability Board (CPAB). 2015a. *CPAB Report on 2015 Inspections of Canada's Big Four Accounting Firms*. Available at: http://www.cpab-ccrc.ca/Documents/Annual%20Reports/CPAB_2015_Big%20Four_Report_EN_Final.pdf

Canadian Public Accountability Board (CPAB). 2015b. *CPAB Report on 2014 All Firm Inspections*. http://www.cpab-ccrc.ca/Documents/Topics/Public%20Reports/2014_Public_Report_EN.pdf

Cannon, N., and J. Bedard. 2016. Auditing challenging fair value measurements: Evidence from the field. *The Accounting Review* (forthcoming).

Carlile, P. R. 2002. A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science* 13 (4): 442–455.

Center for Audit Quality (CAQ) and Institute of Internal Auditors (IIA). 2015. *Intersecting Roles: Fostering Effective Working Relationships Among External Audit, Internal Audit, and the Audit Committee*. Available at: http://www.thecaq.org/reports-and-publications/intersecting-roles

Church, B. K., M. Peytcheva, W. Yu, and O. A. Singtokul. 2015. Perspective taking in auditor–manager interactions: An experimental investigation of auditor behavior. *Accounting, Organizations and Society* 45 (August): 40–51.

Danos, P., J. W. Eichenseher, and D. L. Holt. (1989). Specialized knowledge and its communication in auditing. *Contemporary Accounting Research* 6: 91–109.

Davis, M. H., L. Conklin, A. Smith, and C. Luce. 1996. Effect of perspective taking on the cognitive representation of persons: A merging of self and other. *Journal of Personality and Social Psychology* 70 (4): 713–726.

De Franco, G., O. K. Hope, D. Vyas, and Y. Zhou. 2015. Analyst report readability. *Contemporary Accounting Research* 32 (1): 76–104.

Dougherty, D. 1992. Interpretive barriers to successful product innovation in large firms. *Organization Science* 3 (2): 179–202.

Downey, D. H., and J. C. Bedard. 2016. *Coordination and Communication Challenges in Global Group Audits*. Working paper, Villanova University and Bentley University.

Epley, N., E. Caruso, and M. H. Bazerman. 2006. When perspective taking increases taking: Reactive egoism in social interaction. *Journal of Personality and Social Psychology* 91 (5): 872–889.

Financial Accounting Standards Board (FASB). 2006. *Statement of Financial Accounting Standards No. 157, Fair Value Measurements*. Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB). 2008. FASB Staff Position, FSP FAS 157-3 (October 10). Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB). 2011. *Fair Value Measurement (Topic 820: Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRS*.) Accounting Standards Update No. 2011-04. Norwalk, CT: FASB.

Galinsky, A. D., and G. B. Moskowitz. 2000. Perspective-taking: decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology* 78 (4): 708–724.

Galinsky, A. D., and T. Mussweiler. 2001. First offers as anchors: The role of perspective-taking and negotiator focus. *Journal of Personality and Social Psychology* 81 (4): 657–669.

Giddens, A. 1990. *The Consequences of Modernity*. Stanford, CA: Stanford University Press.

Glover, S. M., M. H. Taylor, and Y. Wu. 2017a. Current practices and challenges in auditing fair value measurements and complex estimates: Implications for auditing standards and the academy. *Auditing: A Journal of Practice & Theory*, 36 (1): 63–84.

Glover, S. M., M. Taylor, and Y. Wu. 2017b. *Mind the Gap: Why do Experts Have Differences of Opinion Regarding the Sufficiency of Audit Evidence Supporting Complex Fair Value Measurements?* Working paper, Brigham Young University, Case Western Reserve University, and Texas Tech University.

Griffith, E. E., J. S. Hammersley, K. Kadous, and D. Young. 2015. Auditor mindsets and audits of complex estimates. *Journal of Accounting Research* 53 (1): 49–77.

Griffith, E. E. 2016a. *Auditors, Specialists, and Professional Jurisdiction in Audits of Fair Values*. Working Paper, University of Wisconsin-Madison.

Griffith, E. E. 2016b. *When Do Auditors Use Specialists' Work to Develop Richer Problem Representations of Complex Estimates?* Working paper, University of Wisconsin-Madison.

Hamilton, E. K. 2016. Evaluating the intentionality of identified misstatements: How perspective can help auditors in distinguishing errors from fraud. *Auditing: A Journal of Practice & Theory* 35 (4): 57–78.

Hanes, D., R. 2013. Geographically distributed audit work: Theoretical considerations and future directions. *Journal of Accounting Literature* 32: 1–29.

Harvest Investments, Inc. 2015. Re: Request for Public Comment – Staff Consultation Paper No. 2015-01, *The Auditor's Use of the Work of Specialists* (May 28).

Hoever, I. J., D. van Knippenberg, W. P. van Ginkel, and H. G. Barkema. 2012. Fostering team creativity: Perspective taking as key to unlocking diversity's potential. *Journal of Applied Psychology* 97 (5): 982–996.

International Forum of Independent Audit Regulators (IFIAR). 2015. *Report on 2014 Survey of Inspection Findings*. Available at: http://www.h3c.org/textes/Etude_IFIAR_2014-EN.pdf

Joe, J. R., S. D. Vandervelde, and Y. Wu. 2016. Use of high quantification evidence in fair value audits: Do auditors stay in their comfort zone? *The Accounting Review* (forthcoming).

Koonce, L., Z. Leitter, and B. J. White. 2016. *The Effect of a Cautionary Notice on Investors' Reactions to More and Less Readable Disclosures*. Available at: https://ssrn.com/abstract=2711542

Landis, J.R., and G. G. Koch. 1977. The measurement of observer agreement for categorical data. *Biometrics* 33: 159–174.

Litchfield, R. C., and R. J. Gentry. 2010. Perspective-taking as an organizational capability. *Strategic Organization* 8 (3): 187–205.

Loughran, T. and B. McDonald. 2016. Textual analysis in accounting and finance: A survey. *Journal of Accounting Research* 54 (4): 1187–1230.

Lowrey, T. M. 1998. The effects of syntactic complexity on advertising persuasiveness. *Journal of Consumer Psychology* 7 (2): 187–206.

Parker, S. K., P. W. B. Atkins, and C. M. Axtell. 2008. Building better work places through individual perspective taking: A fresh look at a fundamental human process. In *International Review of Industrial and Organizational Psychology,* edited by G. Hodgkinson and K. Ford, 149–196. Chichester, England: Wiley.

Petty, R. E., and J. T. Cacioppo. 1986. The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology* 19: 123–205.

Public Company Accounting Oversight Board (PCAOB). 2008. *Report on 2007 Inspection of Deloitte & Touche LLP*. May 19. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2010. *Report on 2009 Inspection of PricewaterhouseCoopers*. October 5. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2011. *Report on 2010 Inspection of PricewaterhouseCoopers*. November 8. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2012a. *Auditing the Future*. June 7. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2012b. *Report on Inspection of KPMG, LLP*. August 15. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2014a. *Staff Consultant Paper: Auditing Accounting Estimates and Fair Value Measurements.* August 14. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2014b. *Report on 2013 Inspection of PricewaterhouseCoopers LLP*. June 19. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2014c. *Report on 2013 Inspection of Ernst & Young LLP*. August 14. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2014d. *Report on 2013 Inspection of KPMG LLP*. September 24. Washington, DC: PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2015a. *Fact Sheet: Staff Consultation Paper on the Auditor's Use of the Work of Specialists* (May 28). Washington, DC: PCAOB. Available at: http://pcaobus.org/News/Releases/Pages/Specialist_Fact_Sheet.aspx

Public Company Accounting Oversight Board (PCAOB). 2015b. *Staff Consultation Paper No. 2015-01, The Auditors' Use of the Work of Specialists.* Washington, DC: PCAOB. Available at: http://pcaobus.org/Standards/Documents/SCP-2015 01_The_Auditor's_Use_of_the_Work_of_Specialists.pdf

Public Company Accounting Oversight Board (PCAOB). 2016. *Standard-Setting Update Office of the Chief Auditor* (December 31). Washington, DC: PCAOB.

Pyzoha, J. S., M. H. Taylor, and Y. Wu. 2016. *The Effects of Tone at the Top Messaging and Specialists on Auditors' Judgments during Complex Audit Tasks*. Working paper, Miami University, Case Western Reserve University, Texas Tech University.

Rennekamp, K. 2012. Processing fluency and investors' reactions to disclosure readability. *Journal of Accounting Research* 50 (5): 1319–1354.

Salterio, S., and R. Denham. 1997. Accounting consultation units: An organizational memory analysis. *Contemporary Accounting Research* 14: 669–691.

Savitsky, K., L. van Boven, N. Epley., and W. M. Wight. 2005. The unpacking effect in allocations of responsibility for group tasks. *Journal of Experimental Social Psychology* 41 (5): 447–457.

Securities and Exchange Commission. 1998. *A Plan English Handbook: How to Create Clear SEC Disclosure Documents*. Washington, D.C.: U.S. Securities and Exchange Commission. Available at https://www.sec.gov/pdf/handbook.pdf.

Smith-Lacroix, J., S. Durocher, and Y. Gendron. 2012. The erosion of jurisdiction: Auditing in a market value accounting regime. *Critical Perspectives on Accounting* 23 (1): 36–53.

Tan, H. T., E. Wang, E., and B. Zhou, B. 2014. When the use of positive language backfires: The joint effect of language sentiment, readability, and investor sophistication on earnings judgments. *Journal of Accounting Research* 52 (1): 273–302.

Tan, H.T., E. Y. Wang, and B. Zhou. 2015. How does readability influence investors' judgments? Consistency of benchmark performance matters. *The Accounting Review* 90 (1): 371–393.

Tarrant, M., R. Calitri, and D. Weston. 2012. Social identification structures the effects of perspective taking. *Psychological science* 23 (9): 973–978.

Todorov, A., S. Chaiken and M. D. Henderson. 2002. The heuristic-systematic model of social information processing. In *The Persuasion Handbook: Developments in Theory and Practice*, edited by J.P. Dillard and M. Pfau, 195-211. Thousand Oaks, CA: Sage Publications, Inc.

Yaniv, I. and M. Milyavsky. 2007. Using advice from multiple sources to revise and improve judgments. *Organizational Behavior and Human Decision Processes* 103 (1): 104–120.

Yaniv, I., and S. Choshen-Hillel. 2012. When guessing what another person would say is better than giving your own opinion: Using perspective-taking to improve advice-taking. *Journal of Experimental Social Psychology* 48 (5): 1022–1028.

APPENDIX A

Excerpt of Complexity in the Specialist's Report Manipulation

Low Communication Complexity Example

JWZ valued its Trade Names using one form of the Income Approach called the Royalty Relief Method. The Income Approach is a way of determining the value of a business... It produces a current fair value estimate based on future cash flows.

The Royalty Relief method considers the royalties saved by owning the intellectual property rather than licensing it. This method is commonly used in the valuation of similar assets and is considered to be reasonable, from a valuation perspective. It is a valuation method used to value certain intangible assets (for example, trademarks and trade names) based on the premise that the only value that a purchaser of the assets receives is the exemption from paying a royalty for its use…

There are 6 major assumptions in the Royalty Relief Method that are used to derive the fair value estimate …We discuss each assumption and our work below….

The royalty rate is based on the royalty payments saved by the Company for owning the Trade Names rather than paying for the licensing of Trade Names…JWZ selected the royalty rate of 3.50% based on its market research of the royalty rates paid in the general manufacturing industry, which ranged from 0.50% to 4.25%....

A discount rate is a rate of return used to convert a future monetary sum, such as cash flows, into present value. Based on the cost of equity, revenue growth risk, brand recognition, competition, and margin, JWZ used the WACC (weighted-average cost of capital) rate of 16.5% for the discount rate. The WACC is determined by the weighted average, at market value, of the cost of all financing sources in the business enterprise's capital structure. We consider a discount rate of 16% to 18% to be reasonable.

High Communication Complexity Condition

JWZ valued the Trade Names using one form of the Income Approach called the Royalty Relief method… This method is commonly used in the valuation of similar assets and is considered to be reasonable, from a valuation perspective.

There are 6 major assumptions in the Royalty Relief Method that are used to derive the FV estimate…We discuss each assumption and our work below….

JWZ selected the royalty rate of 3.50% based on its market research of the royalty rates paid in the general manufacturing industry, which ranged from 0.50% to 4.25%...

Based on the cost of equity, revenue growth risk, brand recognition, competition, and margin, JWZ used a WACC of 16.5% for the discount rate. We would consider a WACC of 16% to 18% to be reasonable.

Business Valuation Glossary [This is presented at the end of the report.]

Discount Rate – A rate of return used to convert a future monetary sum, such as cash flows, into present value.

Income Approach – A way of determining a value of a business…It produces a current fair value estimate based on future cash flows.

Royalty Relief Method – A valuation method that considers the royalties saved by owning the intellectual property rather than licensing it. It is a valuation method used to value certain intangible assets (for example, trademarks and trade names) based on the premise that the only value that a purchaser of the assets receives is the exemption from paying a royalty for its use.

APPENDIX A

Excerpt of Complexity in the Specialist's Report Manipulation - Continued

Royalty Rate – The royalty rate is based on the royalty payments saved by the Company for owning the trade names rather than paying for the licensing of trade names.

WACC – Weighted-average cost of capital (or discount rate) is determined by the weighted average, at market value, of the cost of all financing sources in the business enterprise's capital structure.

APPENDIX B

Excerpt of the Perspective Taking Manipulation

Specialist Perspective Example

Note: At this point, please put yourself in the shoes of a valuation specialist employed by your audit firm to assist auditors ("in-house valuation specialist") in their year-end testing of the client's fair value estimates. Please take the perspective of and think as if you are an in-house valuation specialist of your audit firm when responding to the following:

1. **Taking the perspective of an in-house valuation specialist**, list three important factors that would affect **an in-house valuation specialist's** decision-making about which of the two fair value classification levels Estately should use to classify the Velzi securities (i.e., Level 2 or Level 3).

2. **Taking the perspective of an in-house valuation specialist**, write the conclusion paragraph of **an in-house valuation specialist** report to the audit file. **As an in-house specialist**, what is your recommendation about how the client, Estately, should report the classification level of the Velzi securities (i.e., as Level 2 or Level 3)? Based on the information you have read, please write a short persuasive paragraph (i.e., three sentences) as an in-house valuation specialist to support your conclusions/recommendations to the audit file.

Auditor Perspective Example

1. **As an in-charge auditor**, list three important factors that would affect your decision-making about which of the two fair value classification levels your client Estately should use to classify the Velzi securities (i.e., Level 2 or Level 3)?

2. **As an in-charge auditor**, write the conclusion paragraph for the report to the audit file. **As an in-charge auditor,** what is your recommendation about how the client, Estately, should report the classification level for the Velzi securities (i.e., as Level 2 or Level 3)? Based on the information you have read, please write a short persuasive paragraph (i.e., three sentences) as an in-charge auditor to support your conclusions/recommendations to the audit file.

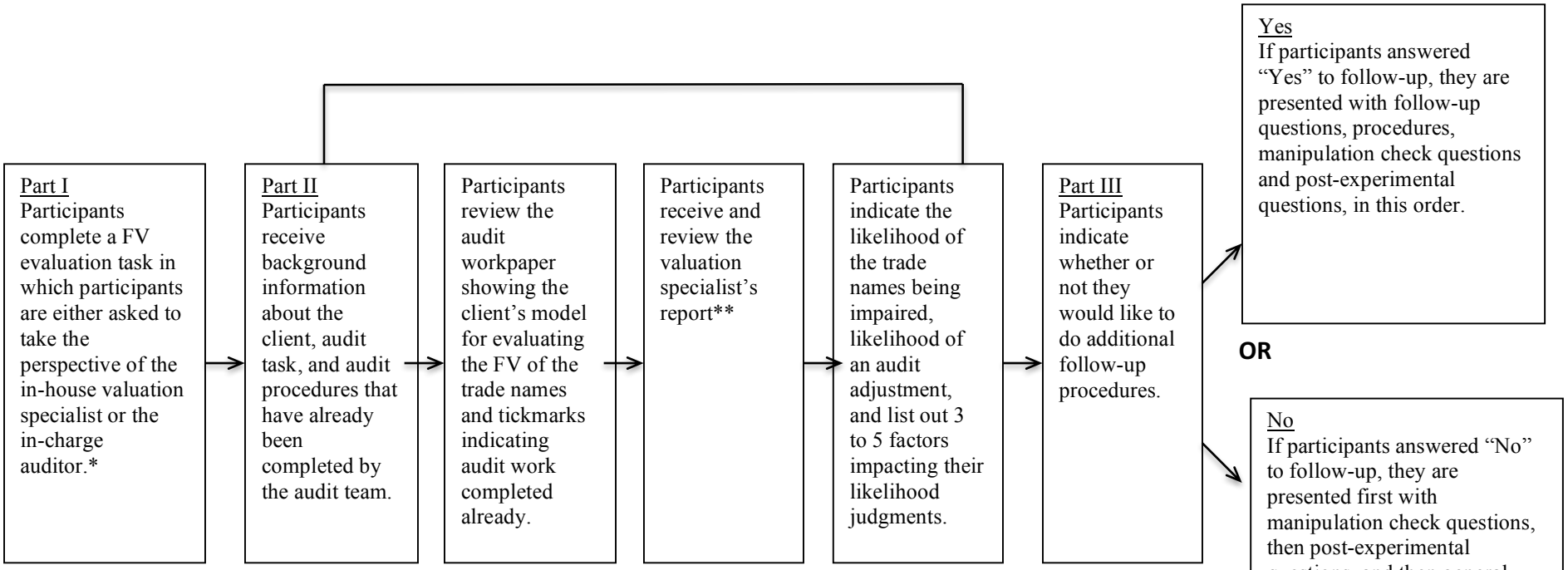
APPENDIX C

Examples of Follow-Up Questions and Procedures

Questions
• Overall, do you believe that the assumptions related to Beta's fair value estimate for the Trade Names account are either aggressive or conservative? Please explain.
• Which, if any, of the inputs to valuation of Beta's Trade Names do you believe are particularly susceptible to management manipulation? Please explain.
Procedures
• Develop an independent estimate of fair value (i.e., an auditor-developed model) to corroborate the Company's fair value measurement and identify exceptions.
• Evaluate whether management's forecasts and projections have been accurate historically and if any updates are necessary for each of three key assumptions for: (1) the royalty rate, (2) the long-term growth rate, and (3) the discount rate.

FIGURE 1

Sequence of Experimental Procedures

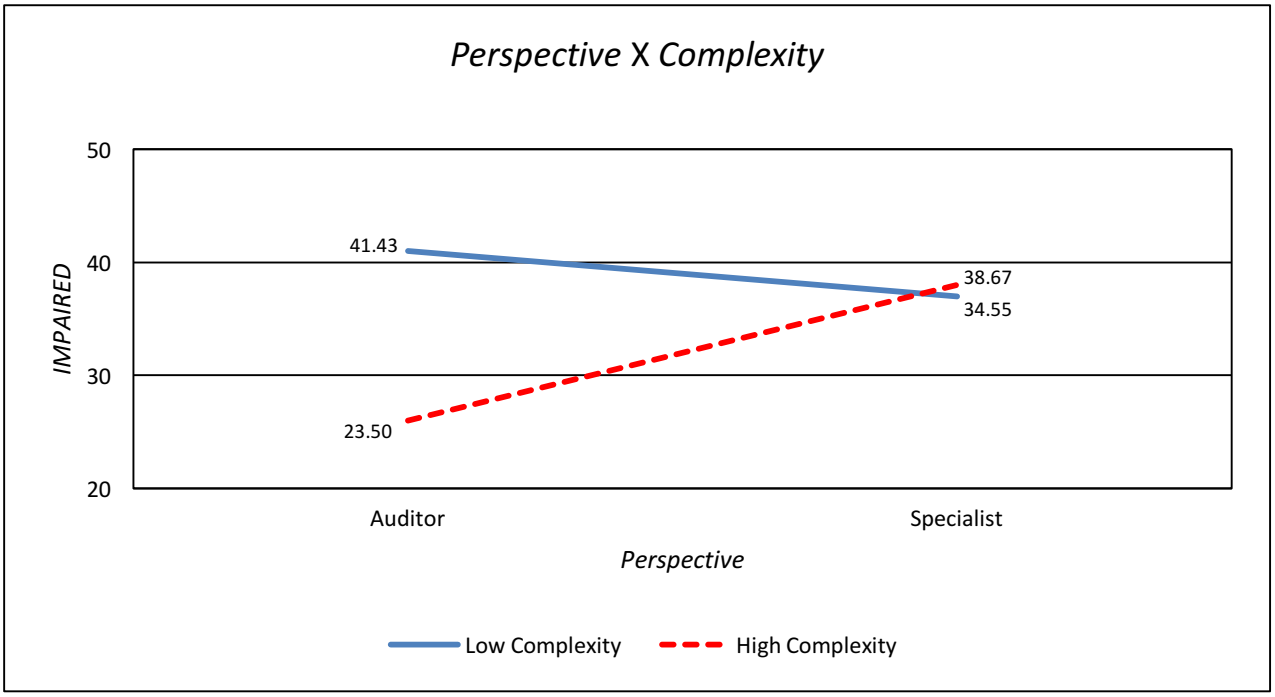


* *Perspective* is manipulated present (specialist) or absent (auditor).

** The communication *Complexity* of the specialist's report to the auditor is manipulated as low vs. high.

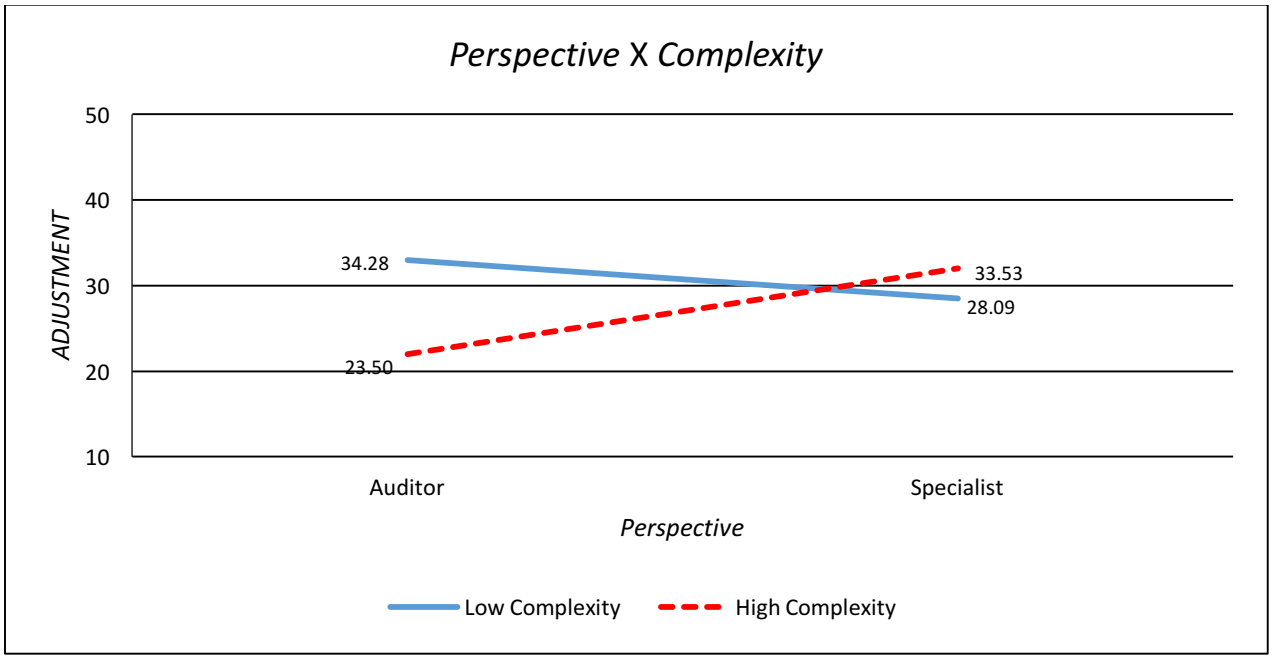
FIGURE 2

Panel A: Observed Interaction – Likelihood of Impairment Judgments



Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Impaired – Participants' indication of the percentage likelihood that the client's trade names should be impaired on a scale ranging from 0%, absolutely not impaired, to 100%, absolutely impaired.

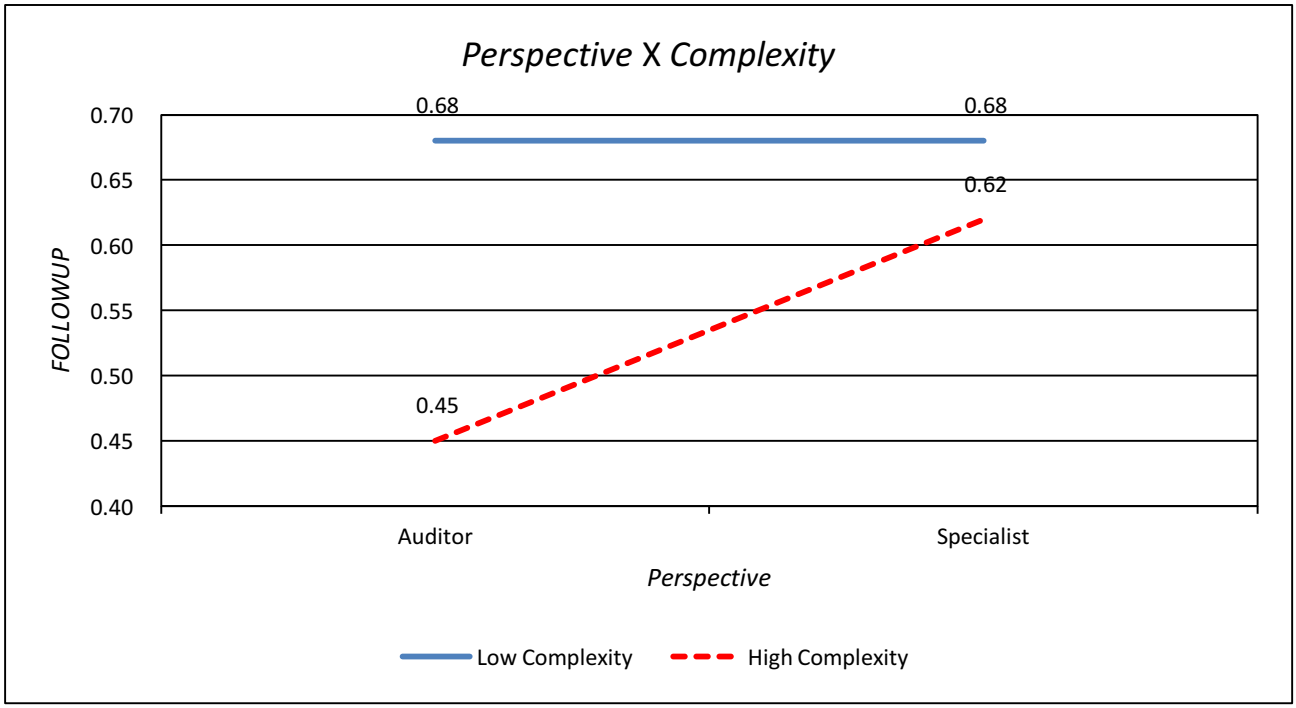
Panel B: Observed Interaction – Likelihood of Audit Adjustment Judgments



Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Adjustment – Participants' indication of the percentage likelihood that they would recommend an audit adjustment for the client's trade names on a scale ranging from 0%, absolutely not, to 100%, absolutely.

FIGURE 3

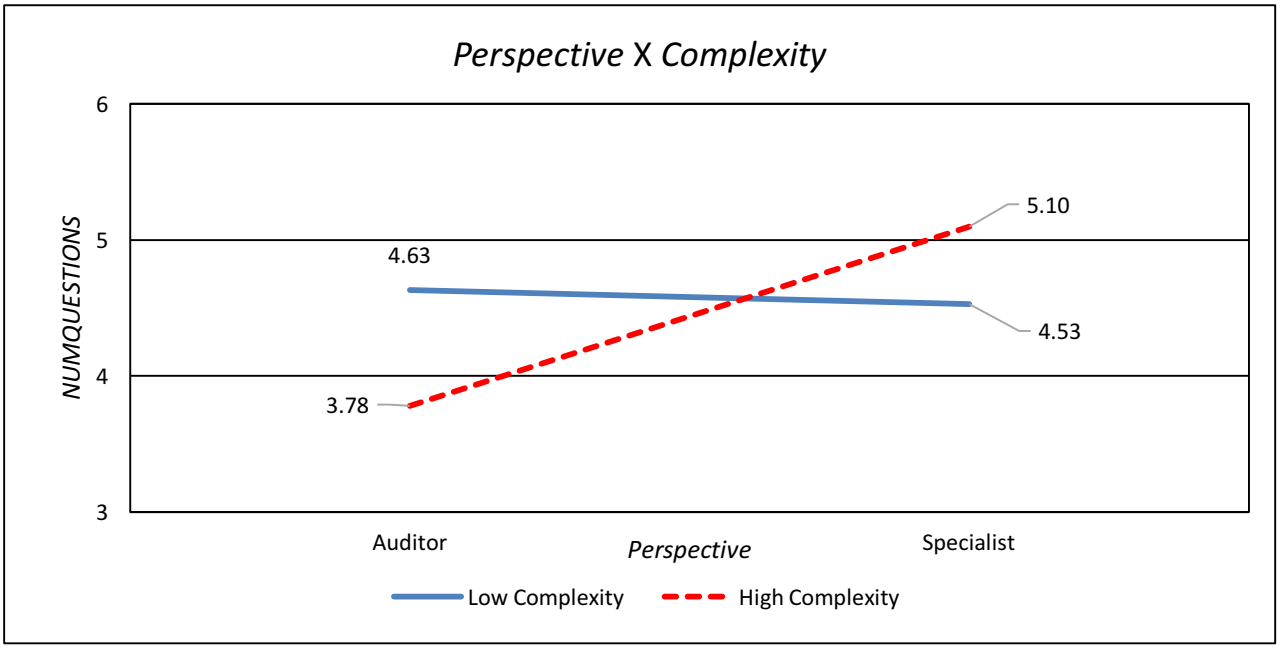
Observed Interaction – Follow-Up Decisions



Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Followup – Proportion of participants in each condition that indicated they wanted to do additional follow-up fieldwork before making an audit conclusion regarding the fair value of the client's trade names.

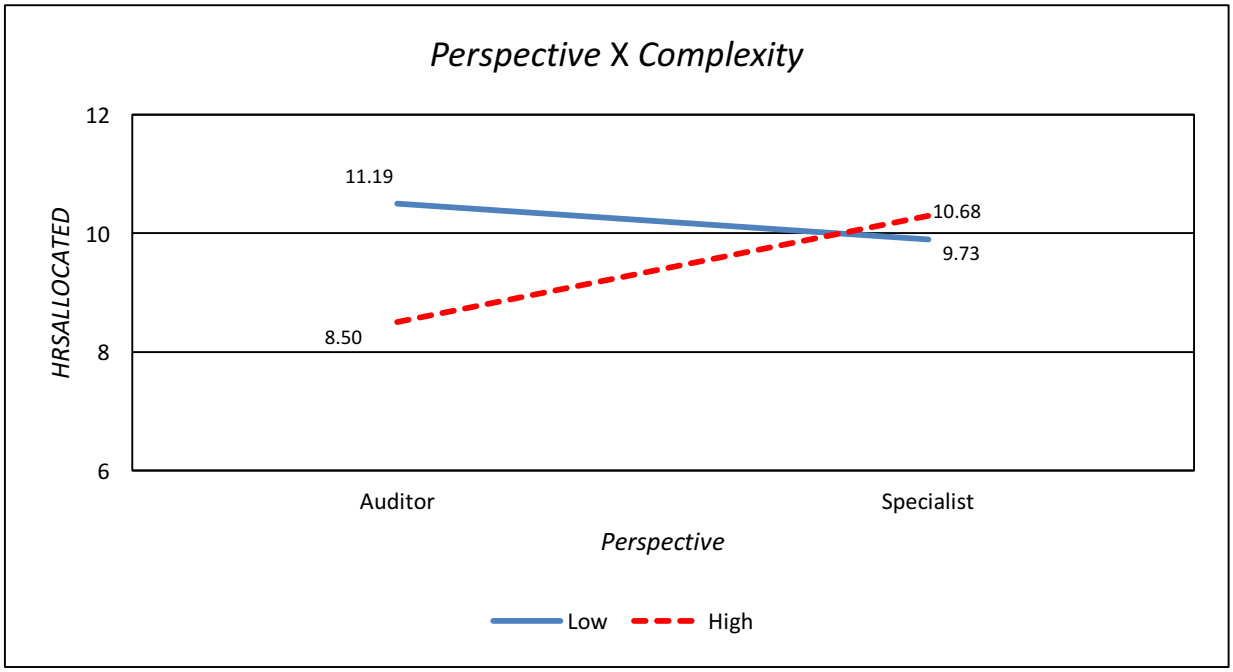
FIGURE 4

Panel A: Observed Interaction – Number of Questions Selected for Follow-Up



Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Numquestions – For the participants who chose to do additional follow-up fieldwork, the total number of questions selected or written-in.

Panel B: Observed Interaction – Hours Allocated to Follow-Up Procedures



Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Hrsallocated – For the participants who chose to do additional follow-up fieldwork, the total number of hours allocated to additional procedures.

TABLE 1

Demographics [b]

Total Number of Participants		104
	Mean	**Standard Deviation**
Years of audit experience	2.86	1.11
Proportion who are CPAs	63%	0.48
Mean number of engagements with material FV estimates	2.76	4.70
Mean number of engagements with material intangibles	1.36	1.64
Experience working with auditor's specialists (*1= very little; 11= extensive*)	6.62	2.40
Primary industry of clients served	**Frequency (Percentage)**	
Banking & financial services		27 (26%)
Consumer products & retail		19 (18%)
Manufacturing		14 (13%)
Technology/software		13 (13%)
Energy		12 (12%)
Other		17 (17%)
Not indicated		2 (2%)

[b] The treatment groups do not differ significantly on any of these demographic variables. For example, the variable that was of closest to significance was number of engagements with material intangibles, where *F* Statistic = 1.82 and *p* value = 0.180.

TABLE 2
Results for Impairment and Audit Adjustment Likelihood Judgments

Panel A: Mean (Standard Deviation) of Impairment Likelihood Preliminary Assessment (*Impaired*) and Adjustment Likelihood Preliminary Assessment (*Adjustment*) by specialist report complexity level and perspective level

Complexity	*Perspective*		
	Auditor	Specialist	Overall
Low			
Impaired	41.43 (23.05)	34.55 (22.41)	38.40 (22.80)
Adjustment	34.28 (23.95)	28.09 (23.37)	31.63 (23.66)
	N=28	N=22*	N=50
High			
Impaired	28.00 (17.35)	38.67 (22.33)	38.70 (21.11)
Adjustment	23.50 (15.31)	33.53 (26.50)	29.81 (23.35)
	N=20	N=34	N=54
Overall			
Impaired	35.80 (21.72)	37.10 (22.25)	36.49 (21.91)
Adjustment	29.79 (21.29)	31.45 (25.27)	30.68 (23.40)
	N=48	N=56	N=104**

Panel B: ANOVA results for impairment likelihood assessments *(Impaired)*

Source	Sum of Squares	df	Mean Square	*F*-Value	*p* >*F*
Complexity	89.61	1	89.61	0.19	0.664
Perspective	538.32	1	538.32	1.14	0.297
Complexity x *Perspective*	1,920.15	1	1,920.15	4.08	0.046
Error	47,073.75	100	470.74		

TABLE 2 (Cont.)
Results for Impairment and Audit Adjustment Likelihood Judgments

Panel C: Simple effects results for the impairment likelihood assessments *(Impaired)*

Simple Effects Tests	df	*F*-Value	$p^a > F$
H1: Effect of *Complexity* given auditor *Perspective*	1	4.47	0.019
H2: Effect of *Perspective* given high *Complexity*	1	3.05	0.042
Effect of *Perspective* given low *Complexity*	1	1.24	0.269

Panel D: ANOVA results for audit adjustment likelihood assessments ***(Adjustment)***

Source	Sum of Squares	df	Mean Square	*F*-Value	*p* >*F*
Complexity	175.97	1	175.97	0.32	0.571
Perspective	90.55	1	90.55	0.17	0.685
Complexity x *Perspective*	1,616.54	1	1,616.54	2.96	0.088
Error	54,040.99	99	545.87		

Panel E: Simple effects results for audit adjustment likelihood assessments ***(Adjustment)***

Simple Effects Tests	df	*F*-Value	$p^a > F$
H1: Effect of *Complexity* given auditor *Perspective*	1	2.49	0.059
H2: Effect of *Perspective* given high *Complexity*	1	2.32	0.065
Effect of *Perspective* given low *Complexity*	1	0.81	0.361

Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Impaired – Participants' indication of the percentage likelihood that the client's trade names should be impaired on a scale ranging from 0%, absolutely not impaired, to 100%, absolutely impaired.
Adjustment – Participants' indication of the percentage likelihood that they would recommend an audit adjustment for the client's trade names on a scale ranging from 0%, absolutely not, to 100%, absolutely.
[a] Given the directional expectations for the effect of *Complexity* given auditor *Perspective* and for the effect of *Perspective* given high *Complexity*, those *p*-values are presented one-tailed.
* One participant in the low complexity, specialist perspective condition did not complete the adjustment question, reducing the N to 21.
**One participant did not complete the adjustment question, reducing the N to 103.

TABLE 3
Results for Follow-Up Decisions

Panel A: Proportion (Frequency) of Participants who chose to do additional follow-up fieldwork (*Followup*) by specialist report complexity level and perspective level

Complexity	*Perspective*		
	Auditor	Specialist	Overall
Low	68% (19)	68% (15)	68% (34)
	N=28	N=22	N=50
High	45% (9)	62% (21)	56% (30)
	N=20	N=34	N=54
Overall	58% (28)	64% (36)	62% (64)
	N=48	N=56	N=104

Panel B: Logit results for follow-up decisions *(Followup)*

Source	Coeff. (St. Err.)	*Wald* χ^2	$p > \chi^2$
Complexity	-0.95 (0.60)	-1.57	0.117
Perspective	0.01 (0.61)	0.02	0.981
Complexity x *Perspective*	0.66 (0.84)	0.80	0.426
Intercept	0.75 (0.40)	1.85	0.065

Panel C: Simple effects results for follow-up decisions *(Followup)*

Simple Effects Tests	df	*Wald* χ^2	$p^a > \chi^2$
H1: Effect of *Complexity* given auditor *Perspective*	1	2.46	0.059
H2: Effect of *Perspective* given high *Complexity*	1	1.42	0.117
Effect of *Perspective* given low *Complexity*	1	0.00	0.980

Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Followup – Proportion of participants in each condition that indicated they wanted to do additional follow-up fieldwork before making an audit conclusion regarding the fair value of the client's trade names.
[a] Given directional expectations for the effect of *Complexity* given auditor *Perspective* and for the effect of *Perspective* given high *Complexity*, those *p*-values are presented one-tailed.

TABLE 4
Results for Number of Questions Asked and Hours Allocated to Procedures During Follow-Up

Panel A: Mean (Standard Deviation) [N] of Number of Questions (*Numquestions*) and Hours Allocated to Procedures *(Hrsallocated)* by specialist report complexity level and perspective level

Complexity		*Perspective*		
		Auditor	Specialist	Overall
Low				
	Numquestions	4.63 (1.21) [19]	4.53 (1.51) [15]	4.59 (1.32) [34]
	Hrsallocated	11.19 (1.46) [18]	9.73 (3.33) [15]	10.53 (2.56) [33]
High				
	Numquestions	3.78 (1.48) [9]	5.10 (1.61) [21]	4.70 (1.66) [30]
	Hrsallocated	8.50 (4.51) [9]	10.68 (3.33) [17]	9.92 (3.84) [26]
Overall				
	Numquestions[*]	4.36 (1.33) [28]	4.86 (1.57) [36]	4.64 (1.44) [64]
	Hrsallocated[**]	10.30 (3.06) [27]	10.23 (3.31) [32]	10.26 (3.17) [59]

Panel B: ANOVA results for number of questions *(Numquestions)*

Source	Sum of Squares	df	Mean Square	*F*-Value	*p* >*F*
Complexity	0.31	1	0.31	0.14	0.353
Perspective	5.34	1	5.34	2.52	0.118
Complexity x *Perspective*	7.21	1	7.21	3.39	0.070
Error	127.52	60	2.13		

TABLE 4 (Cont.)
Results for Number of Questions Asked and Hours Allocated to Procedures During Follow-Up

Panel C: Simple effects results for number of questions *(Numquestions)*

Simple Effects Tests	df	*F*-Value	$p^a>F$
H1: Effect of *Complexity* given auditor *Perspective*	1	1.76	0.094
H2: Effect of *Perspective* given high *Complexity*	1	5.15	0.013
Effect of *Perspective* given low *Complexity*	1	0.04	0.846

Panel D: ANOVA results for hours allocated to procedures *(Hrsallocated)*

Source	Sum of Squares	df	Mean Square	*F*-Value	*p >F*
Complexity	10.49	1	10.49	1.08	0.303
Perspective	1.75	1	1.75	0.18	0.672
Complexity x *Perspective*	45.29	1	45.29	4.67	0.035
Error	532.97	55	9.69		

Panel E: Simple effects results for hours allocated to procedures *(Hrsallocated)*

Simple Effects Tests	df	*F*-Value	$p^a>F$
H1: Effect of *Complexity* given auditor *Perspective*	1	4.50	0.020
H2: Effect of *Perspective* given high *Complexity*	1	2.88	0.048
Effect of *Perspective* given low *Complexity*	1	1.80	0.185

Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Numquestions – The total number of follow-up questions selected or written-in.
Hrsallocated – The total number of hours allocated to follow-up procedures selected or written-in.
[a] Given directional expectations for the effect of *Complexity* given auditor *Perspective* and for the effect of *Perspective* given high *Complexity*, those *p*-values are presented one-tailed.
*64 out of the 104 participants chose to follow-up and ask additional questions of the valuation specialist.
**5 out of the 64 participants who chose to follow-up either did not complete the procedures section or did not allocate time to selected procedures.

TABLE 5
Additional Qualitative Analysis*
Effect of Perspective Taking on Auditor's Critical Evaluation and Integration given High Complexity

Level of Critical Evaluation and Integration in Participants' Explanations	Specialist *Perspective* proportion[a] (n)	Auditor *Perspective* proportion[a] (n)	Column Total	Pearson Chi-square	*p* -value 2-tailed
High – Explanations consider reservations in specialist's evidence and integration of specialist's work with the audit team's test work. The open-ended response discusses caveats noted in the specialist's report (potential aggressiveness in the inputs [e.g., royalty rate and growth projections] and/or model used to estimate FV) AND other facts of the case from audit workpapers such as book vs. fair value considerations or noting that additional information is needed to resolve the issues raised by the specialist. Sample response [Participant #108]: "*CV < FV per their analysis, so as a starting point, no impairment noted. However, range was tight ($9m), and change in assumption > impairment. But valuation team noted some pieces that could have been lower which could trigger impairment. Would need thorough analysis before[we are] able to conclude; audit adjustment needed if there was an impairment - which has same likelihood since small change in assumption changes answer.*"	47.06 (16)	20.00 (4)	20	3.95	0.047
Moderate – Explanations consider reservations in specialist's evidence, but no integration of specialist's work with audit team's test work. The open-ended response discusses caveats noted in the specialist's report (potential aggressiveness in the inputs [e.g., royalty rate and growth projections] and/or model used to estimate FV) BUT does not indicate consideration of other facts of the case from audit workpapers. Sample response [Participant #134]: *"Declining revenue growth risk; using the profit split method would yield a lower fair value. Royalty Rate is in the high end of the range and discount rate is in the low end of the range."*	20.59 (7)	20.00 (4)	11	0.00	0.959
Low – Explanations rely mostly on the specialist's conclusions without critical evaluation of reservations in the specialist's evidence. The open-ended response concludes that the fair value estimate is reasonable based primarily on conclusions in the specialists' report WITHOUT any consideration of the caveats noted in the specialist's report. Sample response [Participant #38]: *"Our valuation team deemed royalty rate, LT growth rate and discount rate are appropriate. Review of external specialists showed no concern; review of external specialist work appeared reasonable; agreed all inputs and performed recalculations w/o/e."*	20.59 (7)	50.00 (10)	17	5.05	0.025
Not classified – No/incomplete responses or entries that are not responsive to the question	10.00 (4)	11.76 (2)	6	0.04	0.842
Row Total	34	20	54		

* This table presents analyses of participant responses to the open-ended question: "In the space below, briefly list the top 3-5 factors that most influenced your judgments on the likelihood of impairment and an audit adjustment for Beta Inc. (i.e., the questions asked above)." The participants' responses were classified into three levels of critical evaluation and integration of the specialist's evidence by a research assistant and author who were blind to the treatment conditions.

[a] The percentage is calculated as the number of participants selecting the theme out of the total number of participants in that *Perspective* condition. For example, 16 out of 34 participants in the Auditor Perspective provided responses classified as a High level of critical evaluation and integration, which equals 47%.

TABLE 6
Additional Analysis

Panel A: Means (Standard Deviation) for readability and understandability of the specialist's report*

Complexity		*Perspective*		
		Auditor	Specialist	Overall
Low				
	Readable	7.38 (1.70)	7.98 (1.68)	7.64 (1.70)
	Understandable	7.32 (1.12)	7.95 (1.36)	7.60 (1.26)
		N=28	N=22	N=50
High				
	Readable	7.90 (1.59)	7.88 (1.70)	7.89 (1.64)
	Understandable	7.60 (1.50)	7.28 (1.81)	7.40 (1.69)
		N=20	N=34	N=54
Overall				
	Readable	7.59 (1.66)	7.92 (1.68)	7.77 (1.67)
	Understandable	7.44 (1.29)	7.54 (1.67)	7.50 (1.50)
		N=48	N=56	N=104

Panel B: Means (Standard Deviation) for competent, reliable, helpful, and team member ratings for the firm's valuation specialist who prepared audit report*

Complexity		*Perspective*		
		Auditor	Specialist	Overall
Low				
	Competent	7.39 (1.59)	7.50 (1.50)	7.44 (1.54)
	Reliable	7.14 (1.75)	7.36 (1.65)	7.23 (1.70)
	Helpful	7.04 (1.75)	7.55 (1.79)	7.26 (1.77)
	Team Member	6.75 (3.05)	6.95 (3.34)	6.84 (3.15)
High				
	Competent	7.50 (1.96)	7.56 (2.15)	7.54 (2.06)
	Reliable	7.55 (1.99)	7.71 (1.85)	7.65 (1.88)
	Helpful	7.20 (2.21)	7.59 (1.94)	7.44 (2.03)
	Team Member	7.35 (2.96)	6.49 (2.77)	6.81 (2.85)
Overall				
	Competent	7.44 (1.74)	7.54 (1.91)	7.49 (1.82)
	Reliable	7.31 (1.85)	7.57 (1.77)	7.45 (1.80)
	Helpful	7.10 (1.94)	7.57 (1.87)	7.36 (1.91)
	Team Member	7.00 (3.00)	6.67 (2.99)	6.82 (2.98)

TABLE 6 (Cont.)
Additional Analysis

Complexity – Degree of communication complexity of the valuation specialist's report to the audit file is manipulated at two levels: low vs. high.
Perspective – Perspective is manipulated at two levels: auditor vs. specialist by prompting the participant to either take the auditor's perspective or the specialist's perspective in a separate FV evaluation task prior to completing the main experimental case.
Readable – Assessment of the *readability* of the audit firm's valuation specialist's report of the evaluation of Beta, Inc. trade names on an 11-point Likert-type scale ranging from 1, not at all readable, to 11, very readable.
Understandable – Assessment of the *understandability* of the audit firm's valuation specialist's report of the evaluation of Beta, Inc. trade names on an 11-point Likert-type scale ranging from 1, not at all understandable, to 11, very understandable.
Competent – Assessment of the valuation specialist's competence on an 11-point Likert-type scale ranging from 1, not at all competent to 11, very competent.
Reliable – Assessment of the valuation specialist's reliability on an 11-point Likert-type scale ranging from 1, not at all reliable to 11, very reliable.
Helpful – Assessment of the valuation specialist's helpfulness on an 11-point Likert-type scale ranging from 1, not at all competent to 11, very competent.
Team Member – Assessment of whether the valuation specialist was a member of the audit team on an 11-point Likert-type scale ranging from 1, not at all considered a member of the audit team, to 11, absolutely considered a member of the audit team.
*ANOVA analysis indicates that participant assessments of the valuation specialist and the valuation specialist's report did not differ significantly across the four treatment groups.