WORKING PAPER

Using Field-Based Evidence to Understand the Antecedents to Auditors' Skeptical Actions

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KEY TAKE-AWAYS

We provide field-based evidence on antecedents to auditors' skeptical actions, with participants including over 600 auditors across all ranks from six audit firms. We evaluate the relative importance of situational, client, and individual auditor characteristics, along with measures of auditors' cognitive processing in relation to their self-reports of skeptical actions on one of their own audits. We find that the most important antecedents are each audit firm's overall professional orientation, auditors' individual feelings of accountability, their trait skepticism, their motivation, and their intentions to behave skeptically. Auditors' intentions are most influenced by social norms and less influenced by attitudes toward and self-efficacy about behaving skeptically. Other important antecedents include each audit firm's quality control systems, certain individual auditors' personality traits, their client-related industry expertise, and their audit knowledge. Our findings support various aspects of prior conceptual models and suggest ways in which audit firms can promote skeptical actions.

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SUMMARY

We provide field-based evidence on antecedents to auditors' skeptical actions, using over 600 auditors across all ranks from six audit firms as participants. We evaluate the relative importance of situational, client, and individual auditor characteristics, along with measures of auditors' cognitive processing in relation to their self-reports of skeptical actions on one of their own audits. We find that the most important antecedents are each audit firm's overall professional orientation, auditors' individual feelings of accountability, their trait skepticism, their motivation to perform well on the engagement, and their intentions to behave skeptically. Auditors' intentions are most influenced by social norms and less influenced by attitudes towards and self-efficacy about behaving skeptically. Other important antecedents include each audit firm's quality control systems, certain individual auditors' personality traits, their client-related industry expertise, and their audit knowledge. Our findings support various aspects of prior conceptual models and suggest ways in which audit firms can promote skeptical actions.

Keywords: Attitudes; Audit Quality; Personality; Professional Skepticism; Subjective norms; Theory of Planned Behavior.

I. INTRODUCTION

Skepticism is critical to audit quality (e.g., Knechel, Krishnan, Pevzner, Shefchik, and Velury 2013; Autoriteit Financiële Markten (AFM) 2014; PCAOB 2015; IAASB 2017; SEC 2022), but ample evidence exists that auditors struggle to take skeptical actions (Hammersley, Johnstone, and Kadous 2011; PCAOB 2012; IAASB 2015; IFIAR 2015; PCAOB 2023). The purpose of our research is to provide large-scale, field-based evidence on the antecedents that matter most to auditors' skeptical actions. We review and integrate prominent conceptual models of auditors' professional skepticism to guide our analyses. These models − Nelson (2009), Hurtt, Brown-Liburd, Earley, and Krishnamoorthy (2013), and Nolder and Kadous (2018) − each begin by articulating situational characteristics as the foundation for subsequent skeptical actions. Next, they propose the importance of both client and auditor characteristics. They also explore the formulation of skeptical judgment leading to auditors' skeptical actions. Consistent with the Theory of Planned Behavior (TPB, Ajzen 1991), Nolder and Kadous (2018) extend the models of Nelson (2009) and Hurtt et al. (2013) by highlighting the importance of cognitive processing, particularly the mediating role of intentions. As the TPB is one of the most relied-upon theories available to explain human behavior, linking cognitive processing, intentions, and subsequent actions, we also employ it as a guide in our theory development.

In coordination with the Foundation for Auditing Research (FAR), we obtained our data from six audit firms in the Netherlands and 663 auditors across all ranks (staff through partner).[1] Auditors completed a survey, part of which contained validated measures of trait skepticism. They also completed an experiential questionnaire in which we requested that auditors retrospectively reflect on one of their actual engagements in line with the Experiential Questionnaire Method (Gibbins and Qu 2005). Auditors did not self-select these engagements, but had to complete the questionnaire about a specific engagement. We collected a wide array

[1] The author team obtained approval from the relevant Institutional Review Board.

of information, some related to the specific audit engagement in question and some related to other factors, including: (1) situational characteristics such as audit firm ethical culture, the extent to which auditors in their firm engage in quality-threatening behaviors, audit firm professional orientation, audit firm quality control, audit firm performance evaluation, and engagement-specific auditors' feelings of accountability; (2) engagement-specific client characteristics, including the importance of the client to the audit firm, the auditor's commitment to and identification with the client, and auditors' feelings of budget pressure; (3) auditor characteristics such as trait skepticism (Hurtt scale, Rotter Interpersonal Trust scale), numerous measures of personality, plus engagement-specific motivation, experience, engagement-specific industry expertise, and audit knowledge; and (4) cognitive processing attributes, including attitudes towards behaving skeptically, peer norms around skepticism, and self-efficacy towards skeptical actions, along with auditors' intentions about behaving skeptically. We also measured the extent of skeptical actions that each auditor took on the engagement in question, including the extent to which they challenged management assertions and the reliability of evidence from management, searched for evidence opposing management's viewpoint, were alert to conditions that could indicate material misstatements, were critical of evidence gathered by other members of the engagement team, among others.

Structural equation modeling (SEM) results show that the most important antecedents to skeptical actions are each audit firm's overall professional orientation, auditors' individual feelings of accountability, their trait skepticism, their motivation to perform well on the engagement, and their intentions to behave skeptically. Further, auditors' intentions are more influenced by social norms and less influenced by attitudes towards and self-efficacy about behaving skeptically. We also observe some differences across ranks on the antecedents of skeptical actions. For example, audit firm quality control appears particularly relevant for staff, while motivation to perform well on the engagement matters most for partners.

Exploratory analyses reveal insights about the interactive effects of trait skepticism. Auditors who are inherently *more* skeptical rely *less* on situational characteristics such as accountability or audit firm quality control systems and also *less* on their own industry expertise to prompt them to act skeptically. Concerning cognitive processing, auditors who are inherently *more* skeptical rely *less* on subjective norms (i.e., social pressure) to prompt them to take skeptical action (i.e., they act skeptically regardless). The corollary implication is that audit firms must carefully manage situational characteristics in the audit environment and provide focused training to auditors who are inherently less skeptical. That is, auditors with low trait skepticism require strong support around situational circumstances (e.g., accountability-inducing mechanisms, stringent audit firm quality control systems), are likely to benefit from intentional development of individual characteristics (e.g., industry-specific knowledge obtained through training and experience), and are particularly influenced by social norms that can induce them to act skeptically.

Our primary contribution is that we are the first to provide large-scale, field-based evidence from over 600 auditors across all ranks on the antecedents that matter most for skeptical actions. Since we asked auditors to reflect on one of their own client engagements, our analyses possess strong external validity and enable us to simultaneously estimate various antecedents to skeptical actions while controlling for other factors. We therefore respond to calls for research employing empirical tests of individual auditor characteristics (e.g., DeFond and Zhang 2014). The psychometric details we gathered reveal sensitive information that is typically difficult for researchers to obtain (e.g., Hobson, Stern, and Zimbelman 2019); ours is the first large-scale study providing evidence on auditors' personality traits and across all audit firm ranks. While some studies examine students or lower-level personnel (e.g., Kerckhofs, Hardies, Vandenhaute, and Ceustermans 2020) or a single personality trait (e.g., locus of control [Fogarty, Reinstein, and Heath 2017]), we know little about auditors' personalities or

the effects thereof. Such information is important because work experiences relate to personality, which explains attitudes and behaviors (e.g., John, Robins, and Pervin 2008; Bleidorn, Hopwoord and Lucas 2018; Woods, Wille, Wu, Lievens, and De Fruyt 2019).

Our results are also of practical relevance. A key takeaway for audit firms is that social norms have the strongest influence on auditors' intentions toward acting skeptically. Further, our findings on the importance of audit firm professional orientation, quality control systems, and auditors' accountability illustrate the role of audit firm culture development that encourages a professional orientation and that is supported by a robust system of quality controls to monitor work (see also Alberti, Bedard, Bik, and Vanstraelen 2022), and are in line with new and proposed standards on audit firm quality management issued by the IAASB (ISQCM1 and 2) and the PCAOB (QC1000). Our results that auditors' feelings of identification towards their clients are negatively associated with skeptical actions has implications for firms' efforts to ensure independence while promoting skeptical actions, and advances recent research on skeptical actions (Brasel, Hatfield, Nickell, and Parsons 2019; Hamilton and Smith 2021; Brazel, Leiby, and Schaefer 2022). Finally, our findings imply that audit firms can encourage auditors with lower trait skepticism to take skeptical actions in different ways, including by establishing accountability-inducing mechanisms and audit firm quality control systems, by providing industry-specific training, and by creating strong social pressure.

We proceed as follows. Section II summarizes conceptual models of auditors' professional skepticism and articulates our research question. Section III articulates methods, while Section IV explains the results. Section V concludes and articulates limitations.

II. LITERATURE REVIEW AND RESEARCH QUESTION

Conceptual Models of Professional Skepticism in Auditing

Auditing standards setters emphasize skepticism (PCAOB 2003; PCAOB 2006; IAASB 2012) and note its role in effectively collecting and evaluating evidence (IAASB 2004; IAASB 2017).

Regulators illustrate deficiencies in skepticism, leading to audit quality detriments (e.g., IFIAR 2015; PCAOB 2019b). With this setting as a backdrop, academic researchers have formulated alternative conceptual models of skepticism. Figure 1 summarizes the three primary skepticism models characterizing the antecedents to skeptical actions in auditing − Nelson (2009), Hurtt et al. (2013), and Nolder and Kadous (2018). These models have certain broad categories in common. They each begin by articulating situational characteristics as the foundation for subsequent skeptical actions. Next, they propose the importance of both client and auditor characteristics. They also explore the formulation of skeptical judgment leading to auditors' ultimate skeptical actions. Importantly, these models propose but do not empirically test various characteristics that may affect skeptical actions.

Within these broad categories, the models conceptualize common elements, along with some important differences. Nelson (2009) and Nolder and Kadous (2018) both identify financial statements as important elements of situational characteristics but differ in that Nelson (2009) also highlights the importance of auditing standards, while Nolder and Kadous (2018) emphasize the role of audit firm culture and audit firm methodology. Hurtt et al. (2013) highlight a broader array of situational characteristics, including client-audit firm tenure, legal liability, international issues, and accountability to both reviewers and regulators. Regarding client characteristics, Nelson (2009) focuses on auditors' underlying incentives, while Hurtt et al. (2013) imagine a host of other possibilities, including management integrity, the client's industry, complexity, and riskiness, along with features of corporate governance, client preferences, and the client's relationship with the auditor. Nolder and Kadous (2018) focus singularly on client pressures with respect to client characteristics. Regarding auditor characteristics, Nelson (2009) proposes that auditors apply knowledge, leverage personal traits, and respond to incentives around evidence judgments. According to Nelson (2009), experience and training indirectly affect skeptical actions via auditors' knowledge and the evidence

auditors collect and evaluate during the engagement. In Nelson's model, knowledge, traits, and incentives all directly affect skeptical actions. Hurtt et al. (2013) also consider training, but expand on other auditor characteristics, such as motivation, independence, moral reasoning, and affect.

Nolder and Kadous (2018) consider individual traits, knowledge and ability, and motivation with respect to a skeptical mindset and a skeptical attitude, and further extend the other two models by highlighting the role of auditors' intentions as a precursor to skeptical actions. Auditors' skeptical intentions correspond to planning decisions (see AICPA SAS 300; PCAOB AS 2101; IAASB ISA 300), while skeptical actions correspond to implementation decisions (see, e.g., AICPA SAS 330; PCAOB AS 2300; IAASB ISA 330). Nolder and Kadous (2018) use cognitive processing to predict auditors' intentions and, in turn, skeptical actions in a manner consistent with the Theory of Planned Behavior (TPB; Ajzen 1991, 2012). The TPB is insightful about determinants of skeptical actions because it constitutes a broadly relied-on theory to link cognitive processing, intentions, and subsequent actions.[2]

The Theory of Planned Behavior

According to the TPB, the strongest predictor of skeptical actions should be auditors' intentions (to act skeptically). The TPB predicts that attitudes, subjective norms, and perceived behavioral control influence subsequent actions *through their collective association with intentions*. Attitude "refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior." In auditing, attitudes that are antecedent to acting skeptically exist along a continuum ranging from perceiving skepticism as relatively beneficial to harmful, pleasant to unpleasant, easy to difficult, or important to unimportant. Subjective norms "refer to the perceived social pressure to perform or not to perform the behavior" (Ajzen

[2] To illustrate, consider the numbers of citations to key publications about the theory. Ajzen (1985) and Ajzen (1991) have been cited more than 30,000 and 11,000 times to date, respectively.

1991, 188). In the context of auditing, subjective norms that are antecedent to skeptical actions would include, for example, an auditor's beliefs around the extent to which others within their firm will encourage them to act skeptically, norms about the extent to which their peers will act skeptically, or expectations of others about the extent to which they will act skeptically. Perceived behavioral control "refers to people's perception of the ease or difficulty of performing the behavior" (Ajzen 1991, 183) and is closely linked to self-efficacy, that is, "judgments of how well one can execute courses of action" (Bandura 1977; Bandura 1982, 122). In auditing, perceived behavioral control around acting skeptically may depend on variation in the extent to which an auditor senses that maintaining skepticism is up to them, their confidence in being able to maintain skepticism, and the extent to which they feel that behaving skeptically is beyond their control. The key inference from the TPB is that intention mediates the association between auditors' attitudes, subjective norms, and perceived behavioral control with respect to skeptical actions; however, no field-based evidence exists concerning these relationships in audit practice.

Empirical Tests of Antecedents to Skeptical Actions

Prior studies in accounting have investigated elements of the three conceptual skepticism models we outlined previously. However, most of that evidence to date is experimental – and thus by design, the number of factors that experimental researchers consider within individual studies has been limited. Below we highlight some insights that we gain from these studies on each of the broad categories of constructs that these conceptual models propose, i.e. situational, client, and auditor characteristics, and on cognitive processing attributes (attitudes, subjective norms, and perceived behavioral control) related to the TPB.

Situational Characteristics

Concerning situational characteristics, existing evidence suggests a positive association between audit partner tone at the top and auditors' skeptical actions. For example, auditors

whose partners emphasize acting skeptically assess fraud risk as higher and recommend performing more audit procedures (Carpenter and Reimers 2013). Partner tone also interacts with auditors' attitudes to determine whether or not they undertake skeptical actions (e.g., increasing information search, detecting contradictions, generating alternatives, and expanding scrutiny of source reliability) (Noviyanti and Winata 2015). Existing research further suggests that differences in auditors' trait skepticism interact with partner tone at the top. Specifically, auditors with higher presumptive doubt skepticism are less likely to perceive that partners support enacting costly skeptical behaviors (Cohen, Dalton, and Harp 2017). Further, Big 4 auditors view the performance appraisal systems under which they operate as disincentivizing them to take skeptical actions (Cohen et al. 2017). Research in fraud brainstorming shows that audit partner leadership relating to subjective norms can improve subordinates' skeptical intentions and subsequent actions (Harding and Trotman 2017; Dennis and Johnstone 2018). However, Stevens, Moroney, and Webster (2019) provide evidence suggesting that partner leadership style only results in more skeptical actions when team identity salience is high.

Auditors also take more skeptical actions (collecting additional evidence) when they receive audit firm evidence-documentation instructions emphasizing high-level construals (broad, abstract interpretations of evidence) than when they receive instructions emphasizing low-level construals (Rasso 2015). Audit firm methodology around evaluations of fair value estimates also increases auditors' skeptical judgments and actions (Cohen, Gaynor, Montague, de Lima Salge, and Wayne 2022).

Client Characteristics

Concerning client characteristics, if client management hires a former partner from their audit firm, auditors tend to take less skeptical actions, such as being more willing to accommodate the client's preference for less conservative accounting policies (Favere-

Marchesi and Emby 2018). As discussed in the next section, a number of studies investigate the interaction between client and auditor characteristics in relation to skeptical actions.

Auditor Characteristics

Other studies investigate the role of individual auditor characteristics in relation to skeptical actions. One such characteristic is trait skepticism, which accounting researchers often measure using the Hurtt (2010) scale. Other measures of skepticism include interpersonal trust (Rotter 1967) and professional moral courage (Serkerka, Bagozzi, and Charnigo 2009). Research finds that intrinsic motivation positively influences auditors to take more skeptical actions, such as identifying more seeded problems within a fair value task and requesting additional evidence (Kadous and Zhou 2019). In addition, rewarding skeptical behavior increases auditors' motivation to be skeptical on future tasks (Brazel et al. 2022). Further, there is a joint influence of social interaction and individual auditors' Dark Triad traits on their application of professional skepticism (Hobson, Stern, and Zimbelman 2019). Researchers also investigate the role of trait skepticism in relation to situational or client characteristics. For example, when auditors interact with a 'friendly' controller, research finds auditors with low but not high trait skepticism less likely to recommend intensive audit follow-up for questionable cash disbursements (Eutsler, Norris and Trompeter 2018). Trait skepticism also interacts with client narcissism; that is, interactions with more-narcissistic client personnel lead to higher fraud risk assessments by more-skeptical auditors compared to less-skeptical auditors (Winardi, Mustikarini, and Permana 2017).

Cognitive Processing Attributes

Cognitive processing relates to attitudes, subjective norms, and perceived behavioral control, the three core constructs of the TPB that predict actions through intention. For example, consistent with the TPB, attitudes, perceived normative pressure, and self-efficacy predict auditors' intentions to appropriately use an audit support system (Dowling 2009). While

no empirical study considers all three constructs (attitudes, subjective norms and perceived behavioral control) simultaneously in relation to professional skepticism, studies have investigated each of these constructs individually. Concerning attitudes, Kadous, Nolder and Peecher (2018) draw from the attitude literature in social psychology to argue that one important antecedent that helps form attitudes is cognitive processing (i.e., critical thinking). Their study shows that engaging in both heuristic (e.g., intuitive) and systematic information processing can increase efficiency in achieving the goal of an objective evaluation of the evidence (i.e., objective attitude). Nolder and Blankenship (2018) recommend that attitude researchers identify the salient attitudes (e.g., professional skepticism and independence of mind) that influence the targeted behaviors in their domains. Currently, there is limited direct empirical research on the influence of attitudes on skeptical actions.

Regarding subjective norms, a few studies have examined the effects of social pressure in auditing. Research shows auditors are more skeptical in their judgments when peers share attitudes that emphasize skepticism. For example, such social pressure makes auditors more skeptical when evaluating fair value estimates (Brink, Tang, and Yang 2016) or in their judgments about the need to collect additional audit evidence (Ying, Patel, and Pan 2019). Likewise, research shows that pressure derived from the advice or actions of a superior affects auditors' skeptical behavior. For example, such pressure affects auditors' willingness to sign-off on financial statements that are materially misstated (Lord and DeZoort 2001). Research on fraud brainstorming effectiveness also shows that leadership behaviors relating to subjective norms can affect subordinates' skeptical orientations (i.e., intentions) and subsequent actions (Harding and Trotman 2017; Dennis and Johnstone 2018). Furthermore, when perceived social influence pressure is higher, partners' known preferences have a stronger effect on auditors' skeptical judgments (Ying, Patel, and Cruz 2022). More generally, social norms for honesty and responsibility enhance audit quality (Blay, Gooden, Mellon, and Stevens 2017).

Finally, limited auditing research has investigated perceived behavioral control. An exception is Hasson and Knechel (2019), applying a self-efficacy construct within Social Cognitive Theory to auditor efficacy and skeptical action. Using interviews, their evidence suggests that efficacy expectations are associated with skeptical actions.

Research Question

While a substantial body of research examines determinants of auditors' skeptical actions (with the studies we highlight above serving as illustrations since our intent is not to provide a comprehensive literature review), we reiterate that studies typically involve experimental manipulation and often consider situational, client, or individual auditor characteristics, or cognitive processing attributes in isolation or with respect to just one or two other characteristics. The relative importance of these characteristics in the context of real audits, while simultaneously controlling for other characteristics, is thus unknown. Taking these considerations into account and within the broad and flexible conceptual framework that we outline in Figure 1, we seek to answer the fo

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llowing research question:

Research Question: *What antecedents matter most to auditors' skeptical actions?*

This is a salient question given regulators' long-standing criticisms that question auditors' willingness or ability to take skeptical actions (e.g., PCAOB 2018, Release No. 104-2019-026A; PCAOB 2019a, Release No. 104-2019-085A). For example, in the case of the inspection report for Anton & Chia (PCAOB 2018), PCAOB staff criticized the firm for its policies and procedures around ensuring that personnel act with due professional care, including acting with professional skepticism. The inspection report for BDO USA (PCAOB 2019a, 33) is particularly critical in this regard, stating:

> *The inspection results indicate that the Firm's system of quality control does not provide such assurance that the Firm's personnel will appropriately exercise the professional skepticism required by AS 1015, AS 2301, and AS 2810 … The inspection team identified five audits in which deficiencies appeared to be caused, at least in part, by the failure to appropriately apply professional skepticism … these deficiencies occurred even in areas where the Firm had identified a risk of fraud.*

These examples from practice underscore the relevance of our research question.

III. METHODOLOGY

Sample and Participants

We test our models by collecting data from audit engagements and their auditors. We obtained data from two Big 4 and four non-Big 4 Dutch audit firms through the Foundation for Auditing Research (FAR). Audit firm contacts of FAR selected 342 audit engagements.[3] Representatives of CenterData, an independent data center, sent an email (and a maximum of three subsequent follow-up emails) to invite 1,447 auditors from these engagements to participate in the study between December 2017 and September 2018. CenterData anonymized and transformed responses before making them available to the research team.

In total, 858 auditors responded (59.3% response rate) (see Table 1). After eliminating missing data, the final sample equals 663 auditors.[4] This missing data includes 100 auditors who merely opened the survey (but did not actually participate) and another 95 who did not complete large parts of the survey. The percentage of responses by rank is 21% partners, 26% managers, 16% seniors, and 37% staff. Firm 1 makes up the greatest proportion of the sample (36.6%).[5]

Research Instrument

We began by asking questions relating to individual auditor demographics and trait skepticism, followed by questions relating to the auditors' firms. Next, auditors completed an experiential questionnaire on one of their actual audits. Auditors were not allowed to self-select

[3] Each firm agreed to provide a specific number of fiscal year-end 2016 engagements in proportion to the total number of audits they conduct each year. Representatives at each firm used a three-step process to select engagements. First, they randomly selected partners whose engagements were to be the subject of a within-firm engagement quality review (this requirement was imposed because we were interested in engagement quality reviews for a different research study). If that process yielded the agreed-upon number of engagements, the selection process concluded. If it did not, the second step included randomly selecting any remaining audit partners within the firm until the agreed-upon number of engagements was achieved. Third, if the sampling process exhausted all partners and the agreed-upon number of engagements was still not achieved, then the representatives randomly selected the sample from all other engagements.

[4] Of the 663 auditors in our final sample, 140 were assigned to engagements that would later be subject to quality review. There are no significant differences in terms of skepticism traits, attitudes, intentions and actions based on whether an engagement was or was not selected for quality review. Analyses using responses of auditors working on non-reviewed engagements only (N = 523) yield essentially the same results, as is also the case if we add a dichotomous variable to the model equal to one if the engagement was later subject to quality review.

[5] In untabulated results, about one percent of our sample clients are listed. Sixty-one percent use Dutch GAAP, eleven percent use IFRS, less than one percent use US GAAP, and for the remainder this information is missing. Audit requirements in the Netherlands are derived from EU legislation, and the International Standards on Auditing are applicable.

an engagement; audit engagements were selected by audit firm contacts of FAR (see footnote 3 above). Retrospective recalls provide evidence about the facts and inferences individuals believe to be part of the original event (e.g., Ericsson and Simon 1980; Nelson, Elliott, and Tarpley 2002; Hammersley 2006; Dennis and Johnstone 2018). Because retrospective recalls are subject to validity threats, we followed the precepts of the Critical Incident Technique (Flanagan 1954) and the Experiential Questionnaire Method (Gibbins and Qu 2005). Furthermore, we promoted accuracy by asking auditors to recall specific experiences and avoiding leading questions (e.g., Christ 1993; Gibbins, Salterio, and Webb 2001; Gibbins and Trotman 2002; Nelson et al. 2002). See Appendix A for variable names and descriptions (including indications of whether variables are engagement-specific), and Appendix B for information about variable measurement.

Common-Method Bias

We recognize and respond to potential common-method bias (Campbell and Fiske 1959), which derives from how we collected our data – auditors may lack the motivation or ability to respond accurately (MacKenzie and Podsakoff 2012). The resulting common-method variance can yield biased measures, thereby threatening construct validity and reliability (Bagozzi and Yi 1990). To mitigate this, we did the following. First, we pilot-tested our instrument and revised it to eliminate item ambiguity. Second, we assured auditors of their anonymity (Podsakoff, MacKenzie, Lee, and Podsakoff 2003). Third, we ensured that measurement was tailored to auditor experience (e.g., there exist common questions across rank, but there also exist different questions across rank). In this study, we report on data from common questions across ranks.[6] Fourth, we employ previously validated measurement scales (e.g., relating to personality and skepticism). Fifth, each firm received a memo containing

[6] For example, staff completed only the questions that we report in the current study. Seniors and managers also completed questions relating to difficult valuation judgments and analytical procedures, whereas partners also completed questions relating to fraud brainstorming, but these are not included in this study.

instructions.[7] Then, the firms sent an internal memo notifying auditors that the FAR through CenterData would be contacting them to participate in a study and explaining the importance of the research to the firm and profession (Podsakoff et al. 2003). In our own cover memo, we reiterated these points and thanked the auditors for participating.[8] Sixth, we attempted to ameliorate evaluation apprehension by assuring that there are no 'right' or 'wrong' answers. Seventh, we mitigated retrospective recall difficulties by focusing attention on a specific engagement. We also instructed participating firms and the FAR to distribute the experiential questionnaire to participants in a timely manner following the completion of the specific engagement. Seventh, we separated the collection of the independent and dependent measures by collecting personality characteristics and trait skepticism at the outset and by measuring skeptical actions towards the end of the instrument, with general questions about the audit firm as an intermediary step. Finally, we conducted factor analyses on all the different items from all the scales included in the experiential survey. There are 52 factors with an eigenvalue greater

[7] The following were instructions to participating firms: "We ask that you adhere to the following guidelines when discussing the survey with participants, as they are critical to the integrity of the research:
- Do not discuss the exact nature of the research. Only communicate that this is a professional skepticism study, approved by the FAR board and your own firm.
- Before distribution of the survey, your firm should communicate to the participants about the importance of the FAR-projects in general and their expected participation in this project specifically.
- Inform all participants upfront about the specific engagement to which their survey will pertain. To this end, CentERdata will inform you about the identities (personnel number identification) of all selected participants and about the corresponding engagements for each participant (engagement number identification)."

[8] The following were instructions to individual participants: "You are kindly invited to participate in a survey that is part of a larger project on professional skepticism. A short while ago, you have been informed by your firm about the importance of this research and as to why we are specifically contacting you to complete our survey. We want to thank you upfront to take some time to participate in our research.

The survey consists of 3 parts. The first part of the survey contains a number of questions about yourself, including how you feel and think about certain aspects of your work life and life in general. The second part of the survey contains a number of questions about your accounting firm and your work environment. The final part of the survey contains questions about the audit engagement of a specific client that you worked on. All questions in this part relate to the same engagement. Please do not mention the name of this client anywhere in the survey. The survey is entirely anonymous.

Before starting the survey, it is important to realize that there are no"right" or "wrong" answers to any of the questions in this survey. People are different, and we are interested in how you feel and think. Please do not confer with your colleagues during or after completing the survey. Do not spend too much time on any one question. Please answer every question, even if you are not completely sure of your response.

Your involvement will be limited to completing the online survey. We expect that completing this survey will take about 25 minutes. Your participation is voluntary. Your participation will be confidential."

than one, and the factor with the highest explained variance explains only about 20% (with other factors less than 10%). Thus, our measurement approach captures distinct constructs.

Theoretical Constructs and Models Estimated

We collected information on many theoretical constructs that conceptual models of professional skepticism or the TPB suggest will be antecedent to auditors' skeptical actions. As discussed above, these constructs relate to situational, client, and auditor characteristics, and cognitive processing attributes. We describe all our measures in detail in the next sections. Figure 2 summarizes these measures and illustrates how they map to the constructs in Figure 1. To answer our research question, we test three empirical models: (1) one examining the associations between situational, client, and auditor characteristics and variation in auditors' skeptical actions (cf. Nelson 2009; Hurtt et al. 2013; Nolder and Kadous 2018); (2) another assessing whether cognitive processing attributes are related to skeptical actions and whether intention mediates those associations (consistent with the TPB); and (3) a third model that combines the situational, client, and auditor characteristics with the cognitive processing attributes. We estimate these models via structural equation modeling (SEM) using a multistage score approach.[9] That is, in the first step, we calculate sum scores for all our independent variables. Next, we use these sum scores to estimate a structural model with our dependent variables (*INTENTIONS*, *SKEPTICAL_ACTIONS*) estimated as latent variables.[10]

Situational Characteristics

[9] While there is some discussion in the methodological literature about the best estimation approach, sum scores have the advantage of interpretability and increase comparability across studies (Widaman and Revelle 2023). Estimating measurement models and the structural relations between latent variables simultaneously yields unbiased parameter estimates, but such models often fail to converge. Further, simulation and empirical studies show that different approaches (e.g., sum scores, factor scores, fully latent variable modelling) yield similar results if the factor score indeterminacies are low (e.g., Devlieger, Mayer, Rosseel 2016; Widaman and Revelle 2023). Estimating measurement models with confirmatory factor analyses (CFA) for the observed variables associated with our latent constructs shows that this is indeed the case for our data (i.e., the coefficients of determination are high, > 0.9, thereby indicating low indeterminacies).

[10] We obtain similar results to those reported if we use estimated factor scores instead of sum scores.

We include several situational characteristics in our empirical models relating to audit firm culture (ethical culture, audit quality threatening behaviors, firm orientation), audit firm quality control system, appraisal of professional skepticism, accountability, and type of audit firm. We measured audit firm *ETHICAL_CULTURE* based on auditors' responses to four items relating to firm culture (e.g., the extent to which senior managers/partners engage in unethical behaviors, the extent to which top audit firm management makes it clear that unethical behaviors will not be tolerated, the extent to which the firm is a leader in promoting ethics in the profession); higher scores indicate a superior ethical culture (Sweeney, Arnold, and Pierce 2010). Cronbach's alpha for *ETHICAL_CULTURE* equals 0.69. We measured audit quality threatening behaviors (*AQT_BEHAVIORS*) with five items relating to actions that may harm audit quality (e.g., accepting weak client explanations, superficial review, failing to research an accounting principle, premature sign-offs/ghost tickmarking) (Kelley and Margheim 1990; Ponemon 1992; Otley and Pierce 1996; Glover 1997; Bedard, Ettredge, and Johnstone 2008; Ettredge, Bedard, and Johnstone 2008); higher scores reflect greater threats to quality. Cronbach's alpha for *AQT_BEHAVIORS* equals 0.84.

We measured audit *FIRM_ORIENTATION* with five professionalism-related items (e.g., independence, providing accurate and trustworthy information to clients, behaving in line with the public interest) (Wittek, van der Zee, and Mühlau 2008); higher scores suggest that the audit firm has a stronger professional orientation. Cronbach's alpha for *FIRM_ORIENTATION* equals 0.89. We measured the relative strength of the audit firm's *QUALITY_CONTROL* system based on Malone and Roberts (1996), using five items relating to issues such as the likelihood that a false sign-off will be discovered or that the review process will discover a quality-threatening behavior; higher scores reflect superior quality control. Cronbach's alpha for *QUALITY_CONTROL* equals 0.71. We measured the relative support that the audit firm's performance appraisal system provides for applying skepticism,

APPRAISAL_PS, with four items relating to evaluation (e.g., evaluation system emphasizes retaining/acquiring clients over maintaining skepticism, promotion policies favor revenue generation over technical skill, promotion policies favor avoiding client conflict) (Cohen et al. 2017; Brazel, Leiby, and Schaefer 2020; Barr-Pulliam, Brazel, McCallen, and Walker 2021); higher scores indicate the performance evaluation system provides greater rewards for applying skepticism. Cronbach's alpha for *APPRAISAL_PS* equals 0.85.[11] We measured auditors' feelings of accountability while working on the specific engagement in question. *ACCOUNTABILITY* was measured with six items related to feelings of accountability to, among others, their engagement team, audit office, and client (Downey, Obermire, and Zehms 2020); higher scores indicate stronger feelings of accountability. Cronbach's alpha for *ACCOUNTABILITY* equals 0.90. Finally, *BIG_4* equals one if the firm is one of the four largest audit firms and equals zero otherwise.

Client Characteristics

We measured *CLIENT_IMPORTANCE* using a single item, "Please estimate the importance of this client to your firm"; higher scores indicate the auditor rates the client as more important. We measured *CLIENT_IDENTIFICATION* based on four items from Bamber and Iyer (2007) and five from Herda and Lavelle (2013).[12] These items relate to feeling as if the client's problems are one's own, a sense of belonging to the client, how auditors feel when someone criticizes or praises the client, and the extent to which the client's successes feel like the auditor's own successes; higher scores indicate higher identification with the client. Cronbach's alpha for *CLIENT_IDENTIFICATION* equals 0.87. We measured the extent to

[11] *ETHICAL_CULTURE*, *AQT_BEHAVIORS*, *FIRM_ORIENTATION*, *QUALITY_CONTROL*, and *APPRAISAL_PS* all relate to audit firms' culture in a broad sense. To ensure discriminant validity (i.e., that each of these measures are measuring distinct constructs), we applied the recent approach suggested by Rönkkö and Cho (2022) and estimated a confirmatory factor analysis model including these different measures with scaling the latent variables by fixing their variances to 1. This analysis did not reveal any evidence of a discriminant validity problems, with the limits of the 95% CI of the covariances all being < 0.8.

[12] The five items from Herda and Lavelle (2013) are intended to measure client commitment, as separate from client identification, but factor analysis and discriminant validity analysis suggest that these measures are not measuring distinct constructs. Hence, we combined them into a single measure of client identification.

which auditors perceived *BUDGET_PRESSURE* using three items relating to time reporting (e.g., budget attainability); higher scores indicate greater budget pressure. Cronbach's alpha for *BUDGET_PRESSURE* equals 0.64. All client characteristics in our empirical analyses relate to the specific engagement in question.

Auditor Characteristics

We measured trait skepticism using the Hurtt Professional Skepticism scale (*HPSS*; Hurtt, 2010). *HPSS* includes 30 items relating to a questioning mind, suspending judgment, searching for knowledge, possessing interpersonal understanding, and having autonomy; higher scores indicate greater trait skepticism. Cronbach's alpha for *HPSS* equals 0.84. We also use Rotter's Interpersonal Trust (reverse-scored so that higher scores indicate greater distrust: *RIT – Distrust*; Rotter 1967, Wrightsman 1991; Quadackers et al. 2014). *RIT – Distrust* includes 25 questions about whether an individual or group can be relied upon (i.e., interpersonal trust). Cronbach's alpha for *RIT – Distrust* equals 0.76. We measured Professional Moral Courage (*PMC*; Sekerka et al. 2009) using 15 items about auditors' willingness and ability to take action on work-related ethical issues; higher scores indicate a greater fortitude toward skeptical actions; Cronbach's alpha for *PMC* equals 0.91.

We measured auditors' *AGE* (in years) and *GENDER* (= 1 if female; = 0 if male).[13] We used the Ten-Item Personality Inventory (Gosling, Rentfrow, and Swann 2003) to measure the Big Five personality traits: *EXTRAVERSION* (enthusiastic, unreserved), *AGREEABLENESS* (sympathetic, warm), *CONSCIENTIOUSNESS* (dependable, organized), *EMOTIONAL_STABILITY* (not easily upset, calm), and *OPENNESS* (complex, conventional); higher scores indicate that the relevant personality trait is stronger for that individual. We also used the Short Dark Triad (Jones and Paulhus 2014) to measure *MACHIAVELLIANISM*

[13] We report descriptive statistics on *AGE*, but do not include it in our multivariate analyses because *AGE* and *EXPERIENCE_YRS* are almost perfectly correlated (r = 0.94). Likewise, we do not include auditors' rank into our main analyses, as auditors' rank is highly correlated with their age/experience. In additional analyses, however, we do report separate analyses for partners, managers, seniors, and staff.

(manipulativeness), *PSYCHOPATHY* (lacking in empathy), and *NARCISSISM* (self-centeredness); higher scores indicate a stronger personality trait. We measured *MOTIVATION* with a single-item question about motivation to perform well on the specific engagement in question; higher scores indicate greater motivation.

We measured audit practice, *EXPERIENCE_YRS*, and engagement-specific *INDUSTRY_EXPERTISE*, which auditors indicate by responding to the following question: "To what extent do you consider yourself to be an "industry expert" in the industry of this client?" We also measured self-assessed task-specific *AUDIT_KNOWLEDGE* relating to valuation (*KNOW_VALUATION*; solving difficult measurement and valuation problems), fraud (*KNOW_FRAUD*; assessing risks of material misstatements due to fraud), and analytical procedures (*KNOW_ANALYTICAL_PROC*; conducting analytical procedures). We employ these measures because they are each relevant to judgmental tasks in which skeptical actions are necessary to ensure audit quality (e.g., Dennis and Johnstone 2018; Tang and Karim 2019; Ballou, Heitger, Heitger, Pyzoha, and Reffett 2020); higher scores indicate more knowledge. Cronbach's alpha for *AUDIT_KNOWLEDGE* equals 0.94.

Cognitive Processing

Cognitive processing relates to attitudes, subjective norms, and perceived behavioral control that, following the TPB, predict actions through intentions. Consistent with prior research (e.g., Buchan 2005; Dowling 2009; Fishbein and Ajzen 2010), we use direct measures of attitude, subjective norms, perceived behavioral control, and intentions. We measured each auditor's *ATTITUDE* towards professional skepticism using five items relating to positive versus negative views around skepticism ("I think that maintaining professional skepticism throughout an audit engagement is ..."): good/bad, harmful/beneficial, pleasant/unpleasant, difficult/easy, and unimportant/important; higher scores indicate a more positive attitude. Cronbach's alpha for *ATTITUDE* equals 0.62. We measured *SUBJECTIVE_NORMS* based on

three items about social pressure to engage in skeptical behavior (their own feelings of social pressure, others' feelings of social pressure, and the firm's social pressure) to which auditors rate their agreement; higher scores indicate that an auditor perceive greater social pressure to engage in skeptical behavior. Cronbach's alpha for *SUBJECTIVE_NORMS* equals 0.71. We measured perceived behavioral control (*PBC*) based on three items about the extent to which an auditor believes they have the self-control to maintain skepticism during the audit (whether maintaining skepticism is up to them, is beyond their control, and their confidence in maintaining skepticism); higher scores indicate higher self-efficacy in maintaining skepticism. Cronbach's alpha for *PBC* equals 0.34.[14]

Skeptical Judgment

We measured *INTENTION* based on four items, consistent with task-relevant adaptation recommendations in Ajzen (1991) and Fishbein and Ajzen (2010, 39-40):

- *I intend to maintain professional skepticism throughout my next audits.*[15]
- *Professional skepticism is an important topic to me.*
- *I am well enough informed to apply professional skepticism throughout an audit.*
- *I often think about professional skepticism.*

Higher scores indicate the auditor's stronger intention to take skeptical actions. Cronbach's alpha for *INTENTION* equals 0.67.

Skeptical Actions

[14] The Theory of Planned Behavior derives from its precursor, The Theory of Reasoned Action, which does not include the concept of perceived behavioral control. Ajzen (1991, p. 183) makes an important distinction between the idea of 'locus of control' and 'perceived behavioral control': "Whereas locus of control is a generalized expectancy that remains stable across situations and forms of action, perceived behavioral control can, and usually does, vary across situations and actions. Thus, a person may believe that, in general, her outcomes are determined by her own behavior (internal locus of control), yet at the same time she may also believe that her chances of becoming a commercial airplane pilot are very slim (low perceived behavioral control)." In an auditing context, an auditor may believe that they can make decisions about their own behavior (high locus of control), while simultaneously finding it difficult to actually exercise professional skepticism on a particular audit engagement (low perceived behavioral control). Aside from *PBC*, the results reveal acceptable composite reliability for each of the latent constructs that we measured (Tabachnick and Fidell 2013). We retain *PBC* because it is an important theoretical component of the Theory of Planned Behavior.

[15] Intentions are often measured with a single item like this one asking people about their intentions (planning, or willingness) to engage in certain behavior. Our results are essentially similar to those reported if we measure *INTENTION* with just this single item rather than with our four-item scale.

We measured *SKEPTICAL_ACTIONS* using eight items, consistent with task-relevant adaptation recommendations in Ajzen (1991, 2006).[16] These items include the following, each of which pertains to the auditor's behavior on the specific engagement we inquired about through the experiential questionnaire:

- *I challenged the reliability of information given by management.*
- *I extensively searched for evidence in order to improve audit quality.*
- *I was willing to challenge management assertions.*
- *I searched for evidence opposing management's point of view.*
- *I was alert to conditions that could indicate possible material misstatements.*
- *I was critical of audit evidence gathered by other members of the engagement team.*
- *I challenged the judgments of other members of the engagement team.*
- *I searched for evidence supporting management's point of view.*

Higher scores indicate more skeptical actions on the relevant audit engagement. Cronbach's alpha for *SKEPTICAL_ACTIONS* equals 0.86.

IV. RESULTS

Descriptive Statistics

Table 2, Panel A includes descriptive statistics, and Panel B includes univariate comparisons across groups for which *SKEPTICAL_ACTIONS* are more versus less than the sample median.

Situational Characteristics

Mean *ETHICAL_CULTURE* equals 21.4 (theoretical maximum of 28), which indicates a fairly high ethical culture at our sample audit firms. Table 2, Panel B reveals that auditors taking more skeptical actions are more likely to come from firms with a more *ETHICAL_CULTURE* (t = -5.34, $p < 0.001$) than auditors taking less skeptical actions. The mean number of *AQT_BEHAVIORS* is 15.4 (theoretical maximum of 35), which indicates only a moderate extent of behaviors such as a "superficial review of client documents" (mean =

[16] In addition to these eight items, we also collected information about skeptical actions using nine questions based on the work of Robinson et al. (2018). As these questions are based on the Hurtt scale, intended to measure state skepticism, there may be concerns about their appropriateness to measure skeptical actions and potential mechanical correlations with *HPSS*. Therefore, we do not use these items in our reported analyses. Our results, however, are essentially the same if we use these nine items as an alternative measure of skeptical actions or if we combine all seventeen items into a single measure.

3.66) or "acceptance of weak client explanations" (mean = 3.33). Auditors taking more skeptical actions are less likely to come from firms where quality-threatening behaviors occur (t = 3.63, p < 0.001). The mean value for *FIRM_ORIENTATION* equals 30.1 (theoretical maximum of 35), which indicates that auditors view their firms' professional orientation as very high quality; as an example, we find a mean of 6.08 (on a scale where 7 is 'extremely important' in your accounting firm) for "providing accurate and trustworthy information to clients." Auditors taking more skeptical actions are more likely to come from firms with a more professional orientation (t = -8.20, p < 0.001) than auditors taking less skeptical actions.

Mean *QUALITY_CONTROL* equals 21.2 (theoretical maximum of 35), implying a moderate quality-control orientation at our sample audit firms, e.g., we find a mean of 5.23 (on a scale where 7 indicates strong agreement) for the statement "if an auditor accepts a weak explanation from a client, the review process will probably discover this and require additional work." Auditors taking more skeptical actions are more likely to come from firms with a higher quality-control orientation (t = -3.90, p < 0.001). Mean *APPRAISAL_PS* equals 19.4 (theoretical maximum of 28), which indicates that auditors assess firm evaluation systems as providing only moderate support for rewarding professional skepticism, e.g., we find a mean of 2.93 (where 1 indicates 'strongly disagree') for the statement "promotion policies at my firm favor avoiding conflict with the client over the application of professional skepticism." Auditors taking more skeptical actions are more likely to come from firms with a stronger *APPRAISAL_PS* (t = -4.35, p < 0.001) than auditors taking less skeptical actions.[17] Mean *ACCOUNTABILITY* equals 31.9 (theoretical maximum of 42), revealing that our sample auditors feel relatively highly accountable for their specific engagements, with auditors taking more skeptical actions feeling more accountable (t = -11.60, p < 0.001) than auditors taking

[17] The univariate result for *APPRAISAL_PS* is consistent with the findings in Cohen, Dalton, and Harp (2017) regarding the neutral perspective of professional skepticism, which is positively associated with perceived partner support for professional skepticism.

less skeptical actions. Fifty percent of our sample are *BIG_4* auditors, and 60 percent of more skeptical auditors are from the *BIG_4* (X^2 = -3.25, p = 0.001).

Client Characteristics

Mean *CLIENT_IMPORTANCE* is at a moderate level of four (theoretical maximum of seven). Auditors taking more skeptical actions on a specific engagement relate to clients with greater importance to the firm (t = -2.53, p = 0.012). Mean *CLIENT_IDENTIFICATION* equals 1.9 (theoretical maximum of five), so our sample auditors appear relatively independent in attitude with regard to the client whom they are referencing in answering our questions. *BUDGET_PRESSURE* equals a mean of 11.2 (theoretical maximum of 21), so this feeling is at a moderate level. None of the three measures of client characteristics differ by level of *SKEPTICAL_ACTIONS*.

Auditor Characteristics

Mean *HPSS* equals 137.3 (range = 103 – 168), with values for staff, seniors, managers, and partners equal to 135, 136, 138, and 141, respectively (untabulated); these values are consistent with other studies in accounting (e.g., Khan and Oczkowski 2019). In untabulated results, we find that partners have higher *HPSS* than managers (t = 2.50, p = 0.012), seniors (t = 3.70, p = 0.000), and staff (t = 5.30, p = 0.000). Managers' *HPSS* is not significantly different compared to seniors, and seniors are not significantly different compared to staff. However, managers' *HPSS* is significantly greater than staff (t =2.90, p = 0.004). Table 2, Panel B reveals that auditors taking more skeptical actions have higher trait skepticism (t = -9.87, p < 0.001) than auditors taking less skeptical actions. The mean *RIT-Distrust* equals 78.0 and does not differ by auditors taking more versus less skeptical actions. The mean moral courage (*PMC*) equals 79.2, and auditors taking more skeptical actions have higher levels of *PMC* (t = -10.62, p < 0.001). Twenty-seven percent of our auditors are female, and *GENDER* does not differ by auditors taking more versus less skeptical actions.

Regarding the "Big Five" personality traits, our auditors have relatively similar levels of *EXTRAVERSION*, *AGREEABLENESS*, and *OPENNESS* and somewhat higher levels of *CONSCIENTIOUSNESS* and *EMOTIONAL_STABILITY* compared to individuals from other studies (e.g., Ehrhart, Ehrhart, Roesch, Chung-Herrera, Nadler, and Bradshaw 2009; Romero, Gomez-Fraguela, and Lopez-Romero 2012; Isaacs, Mota, Tsai, Harpaz-Rotem, Cook, Kirwin, Krystal, Southwick, and Pietrzak 2017; Rouwelaar and DeLoo 2018; Hardies 2019). Auditors taking more skeptical actions tend to possess higher levels of these traits than auditors taking less skeptical actions, except for being less *AGREEABLE* (t = 2.06, p = 0.040). For the Dark Triad personality traits, our auditors have relatively similar levels of *MACHIAVELLIANISM*, *NARCISSISM*, and *PSYCHOPATHY* compared to individuals from other studies (e.g., Majors 2013; Hmieleski and Lerner 2016; Vedel and Thomsen 2017; Prusik and Szulawski 2019; Wissing and Reinhard 2019). Auditors taking more skeptical actions possess lower levels of *MACHIAVELLIANISM* (t = 4.02, p < 0.001) and lower levels of *PSYCHOPATHY* (t = 3.70, p < 0.001) but higher *NARCISSISM* (t = -2.00, p = 0.046) than auditors taking less skeptical actions.

Mean *EXPERIENCE_YRS* equals 10.2, with auditors taking more skeptical actions being older than those taking less skeptical actions (t = -6.85, p <0.001).[18] Mean *INDUSTRY_EXPERTISE* equals 4.2, indicating a high level of self-assessed expertise. Auditors taking more skeptical actions self-assess higher industry expertise (t = 8.40, p < 0.001). Mean self-assessed task-specific *AUDIT_KNOWLEDGE* is 14 (with a theoretical maximum of 21) (and for valuation, fraud, and analytical procedures, it equals 4.6, 4.7, and 5.1, respectively, on a scale from 1 to 7); for each knowledge measure, auditors taking more

[18] The mean *AGE* of our sample auditors is 32.4 years, with auditors taking more skeptical actions being older than those taking less skeptical actions (t=-6.42, p<0.001). Five percent of our sample participants were age 21 years or younger because there exist some 'work study' programs for entry level personnel.

skeptical actions self-report their knowledge as higher ($p < 0.001$ for each variable) than auditors taking less skeptical actions.

Cognitive Processing and Skeptical Judgment

The mean *ATTITUDE* towards professional skepticism equals 28.4 (theoretical maximum of 35), which is higher for auditors taking more skeptical actions than for auditors taking less skeptical actions ($t = -5.88$, $p < 0.001$). Mean *SUBJECTIVE_NORMS* about the perceived social pressure to engage in skeptical behavior equals 17.7 (theoretical maximum of 21). *SUBJECTIVE_NORMS* is higher for auditors taking more skeptical actions than for those taking less skeptical actions ($t = -6.93$, $p < 0.001$). Mean perceived behavioral control (*PBC*) about auditors' self-efficacy towards maintaining professional skepticism equals 15.3 (theoretical maximum of 21), and this value is higher for auditors taking more skeptical actions compared to those taking less skeptical actions ($t = -3.09$, $p < 0.001$). The mean for *INTENTION* to behave skeptically is 23.7 (theoretical maximum of 28), and this value is higher for auditors taking more versus less skeptical actions on the specific engagement ($t = -9.38$, $p < 0.001$).

Correlations

Table 3 presents correlations between *SKEPTICAL_ACTIONS* and other variables.[19] Panel A reveals the strongest positive associations with *FIRM_ORIENTATION* ($r = 0.45$, $p < 0.01$) and *ACCOUNTABILITY* ($r = 0.48$, $p < 0.01$) and the strongest negative association with *AQT_BEHAVIORS* ($r = -0.20$, $p < 0.01$). Thus, auditors are more likely to report acting skeptically on their specific engagement when others in their firm are perceived to exhibit a professional orientation and when the auditor feels accountable while working on the specific engagement; they are less likely to report acting skeptically when others in their firm exhibit

[19] In simple linear regressions, we find low VIFs, indicating that our data are not subject to multicollinearity problems.

quality-threatening behaviors (e.g., accepting weak client explanations or prematurely signing off on an audit step). Panel B shows low correlations between *SKEPTICAL_ACTIONS* and client characteristics; the exception in this regard is between *CLIENT_IDENTIFICATION* and *CLIENT_IMPORTANCE* ($r = 0.19$, $p < 0.01$); this implies that auditors identify more strongly with their more-important clients. Panel C reveals the highest correlations (all $p < 0.01$) between *SKEPTICAL_ACTIONS* and auditor characteristics, including *HPSS* ($r = 0.44$), *PMC* ($r = 0.46$), engagement-specific *MOTIVATION* ($r = 0.40$), and general knowledge on measurement and valuation *KNOW_VALUATION* ($r = 0.37$). The highest correlation in Panel D occurs between engagement-specific *SKEPTICAL_ACTIONS* and general *INTENTION* to behave skeptically ($r = 0.43$).

Goodness-of-Fit Indices

We employ commonly-used cutoffs for goodness-of-fit indices, including a CFI higher than 0.90, a SRMR lower than 0.08, and a RMSEA lower than 0.06 (Wheaton, Muthen, Alwin, and Summers 1977; Hu and Bentler 1998; Tabachnick and Fidell 2013; Hooper, Coughlan, and Mullen 2008; Kline 2016). For completeness, we also report the X^2 statistic, although this test of the exact overall fit between the model and data is often considered not to be of general interest. Sometimes the relative X^2 is also reported considering the limitations of the X^2 statistic, although both statistics are heavily dependent on sample size. Smaller values for the relative X^2 indicate a better fit, with five being a standard cutoff value (e.g., West, Taylor and Wu 2012), although some authors suggest that it should be less than two (Ullman 2001) or three (Kline 2016).

Table 4 provides results for structural equation modeling estimation alternatives to answer our research question. Model [1] captures the association between situational, client, and auditor characteristics and engagement-specific *SKEPTICAL_ACTIONS*. Model [2] captures the association between *ATTITUDE*, *SUBJECTIVE_NORMS*, and *PBC* and general

INTENTION to behave skeptically, and then between *INTENTION* and *SKEPTICAL_ACTIONS*. Model [3] includes all the associations present in both Models [1] and [2]. We find CFI values across all three model specifications across the range of 0.91 - 0.99, SRMR values across the range of 0.025 - 0.037, RMSEA values across the range of 0.033 - 0.041, and relative X^2 values across the range of 1.69 - 2.06. Thus, regardless of specification, our structural models each possess a reasonably acceptable fit to the data, and inferences are the same regardless of variation in model specifications.

Research Question

Results for situational characteristics in Models [1] and [3] reveal positive associations of *FIRM_ORIENTATION* (0.192, $p < 0.001$; 0.148, $p < 0.001$), firm-level *QUALITY_CONTROL* (0.081, $p = 0.030$; 0.092, $p = 0.016$), engagement-specific *ACCOUNTABILITY* (0.176, $p < 0.001$; 0.201, $p < 0.001$), and *BIG_4* (0.107, $p = 0.001$; 0.093, $p = 0.004$) on engagement-specific *SKEPTICAL_ACTIONS*. These results highlight the importance of audit firms' professional orientation and quality control systems and confirm the expectation that auditors' feelings of accountability are positively associated with skeptical actions (Hurtt et al. 2013). Results for our three engagement-specific client characteristics show that only *CLIENT_IDENTIFICATION* is negatively associated with engagement-specific *SKEPTICAL_ACTIONS* (-0.080, $p = 0.017$; -0.074, $p = 0.032$), suggesting that maintaining independence is key for skeptical behavior (Hurtt et al. 2013). For *CLIENT_IMPORTANCE* and *BUDGET_PRESSURE,* we do not find such associations with *SKEPTICAL_ACTIONS*.

In terms of auditor characteristics, results in Models [1] and [3] show positive associations of *HPSS* (0.200, $p < 0.001$; 0.172, $p < 0.001$), *PMC* (0.100, $p = 0.008$; 0.090, $p = 0.020$), engagement-specific *MOTIVATION* (0.155, $p < 0.001$; 0.150, $p < 0.001$), *AUDIT_KNOWLEDGE* (0.120, $p = 0.001$; 0.098, $p = 0.007$), and engagement-specific *INDUSTRY_EXPERTISE* (0.148, $p < 0.001$; 0.143, $p < 0.001$) on engagement-specific

SKEPTICAL_ACTIONS. These results imply that auditor traits, motivation, knowledge and expertise matter for skeptical behavior as proposed by the conceptual models on skepticism (Nelson 2009; Hurtt et al. 2013; Nolder and Kadous 2018). Results further show negative associations of *AGREEABLENESS* (-0.073, p = 0.014; -0.069, p = 0.024) with *SKEPTICAL_ACTIONS,* and while Hobson et al. (2019) find that higher levels of Dark Triad traits are not always counterproductive, our main results show that *MACHIAVELLIANISM* (-0.080, p = 0.021; -0.092, p = 0.010) is negatively associated with *SKEPTICAL_ACTIONS*.

Results for Models [2] and [3] confirm expectations among constructs from the Theory of Planned Behavior. We find positive associations between *ATTITUDE* (0.282, p < 0.001; 0.208, p < 0.001), *SUBJECTIVE_NORMS* (0.600, p < 0.001; 0.586, p < 0.001), and *PBC* (0.123, p = 0.001; 0.114, p = 0.001) with general *INTENTION* to behave skeptically, and a positive association between general *INTENTION* to behave skeptically and engagement-specific *SKEPTICAL_ACTIONS* (0.604, p < 0.001; 0.168, p < 0.001). Thus, intentions towards skeptical behavior mediate the effects of attitudes, subjective norms, and perceived behavioral control on skeptical actions. To illustrate the mediational role of *INTENTION*, assume that an auditor perceives a high level of social pressure to behave skeptically (i.e., high *SUBJECTIVE_NORMS*). High *SUBJECTIVE_NORMS* positively influence auditors' *INTENTION* to behave skeptically, which in turn influences auditors' skeptical actions.

Our models report standardized coefficients to enable evaluation of the relative importance of the various antecedents to auditors' skeptical actions, and we describe how effect sizes vary between auditors with the highest versus lowest scores for variables that have a strong effect on skeptical actions. Using the results from Model [3], we first find that the score on engagement-specific *SKEPTICAL_ACTIONS* is six points higher, *ceteris paribus*, for auditors with the highest scores on general *INTENTION* to behave skeptically than for auditors

with the lowest scores.[20] Second, the association between *SUBJECTIVE_NORM* and *INTENTION* is roughly three times as strong as between *INTENTION* and *ATTITUDE* and five times as strong as between *INTENTION* and *PBC*. Third, to evaluate the relative importance of these cognitive processing factors for engagement-specific *SKEPTICAL_ACTIONS* vis-à-vis situational, client, and auditor characteristics, we estimate the indirect effects of these cognitive processing factors on auditors' *SKEPTICAL_ACTIONS*. This yields the following pattern of results: *ceteris paribus*, the score on *SKEPTICAL_ACTIONS* is higher by 7.1 points between auditors with the highest versus lowest feelings of engagement-specific *ACCOUNTABILITY*, 5.9 points between auditors with the highest versus lowest trait skepticism (*HPSS*), 4.7 points between auditors with the highest versus lowest engagement-specific *MOTIVATION*, 4.6 points between auditors with the highest versus lowest perceptions of professional *FIRM_ORIENTATION*. These interpretations help illustrate the practical magnitude of the effect sizes we detect.

Supplemental Tests

We explore the interaction effects of auditor characteristics with either situational or client characteristics or cognitive processing factors. We conducted multi-group SEM analyses to examine if the path coefficients differ between auditors within one group (e.g., *HPSS* above the sample median) versus auditors within another group (e.g., *HPSS* below the sample median). Significant chi-square differences provide evidence for group differences in path coefficients (i.e., a moderating role of the relevant variable).

Trait Skepticism

[20] For example, the coefficient for *HPSS* is 0.172, implying that for each increase of *HPSS* by one *SD* the number of *SKEPTICAL_ACTIONS* increases with 0.172 *SD*. The *SD* for *SKEPTICAL_ACTIONS* in our sample is 5.6. For *HPSS*, the *SD* is 10.6, and the difference between the highest and lowest scoring auditor is 65 (= 168 - 103). This translates into a difference of 5.9 [= (0.172 * 5.6) * (65 / 10.6)] points on our *SKEPTICAL_ACTIONS* measure between auditors with the highest and lowest *HPSS* score, *ceteris paribus*.

Skeptical Intentions. Results (untabulated) show that for high *HPSS* auditors, the associations between *ATTITUDE* and *INTENTION* (b_1 = 0.041) and between *SUBJECTIVE_NORM* and *INTENTION* (b_2 = 0.436) are weaker than for low *HPSS* auditors (b_1 = 0.180, $\Delta\chi^2$ = 7.18, p = 0.007; b_2 = 0.773, $\Delta\chi^2$ = 14.94, p < 0.001, respectively). Conversely, the association between *PBC* and *INTENTION* is stronger for auditors with high *HPSS* (b_1 = 0.203) than for auditors with low *HPSS* (b_2 = -0.081, $\Delta\chi^2$ = 6.47, p = 0.010). Thus, auditors with higher trait skepticism do not require particularly strong attitudes or subjective norms about skepticism to still intend to act skeptically. In contrast, auditors with higher trait skepticism who feel relatively more in control of their ability to maintain skepticism intend to act even more skeptically than their inherently less skeptical colleagues.[21]

Skeptical Actions. We also find that for high *HPSS* auditors, the association between engagement-specific *ACCOUNTABILITY* and engagement-specific *SKEPTICAL_ACTIONS* is weaker (b_1 = 0.119) than for low *HPSS* auditors (b_2 = 0.229, $\Delta\chi^2$ = 6.90, p = 0.009). Further, for auditors with high *HPSS*, the association between *QUALITY_CONTROL* and engagement-specific *SKEPTICAL_ACTIONS* is weaker (b_1 = -0.034) than for auditors with low *HPSS* (b_2 = 0.153, $\Delta\chi^2$ = 7.10, p = 0.008). We find no other interactive relationships between *HPSS* and other situational or client characteristics. In terms of auditor characteristics, the association between *MACHIAVELLIANISM* and engagement-specific *SKEPTICAL_ACTIONS* is positive for high *HPSS* auditors (b_1 = 0.017) but negative for low *HPSS* auditors (b_2 = -0.178, $\Delta\chi^2$ = 9.29, p = 0.017). This finding would confirm that higher levels of Dark Triad traits are not always counterproductive and that there appears to be a complex relationship between individual auditors' Dark Triad traits and their application of professional skepticism (Hobson et al. 2019). The association between engagement-specific *INDUSTRY_EXPERTISE* and

[21] Unlike for *HPPS*, we do not find any moderating effects of *PMC* or *RIT-Distrust* on the associations between situational, client, or auditor characteristics, or cognitive processing with auditors' skeptical intentions.

engagement-specific *SKEPTICAL_ ACTIONS* is weaker for high *HPSS* auditors (b_1 = 0.068) than for low *HPSS* auditors (b_2 = 0.239, $\Delta\chi^2$ = 7.64, p = 0.006). Therefore, auditors who are inherently more skeptical rely less on situational characteristics such as engagement-specific accountability or audit firm quality control systems to prompt them towards skeptical actions than auditors who are inherently less skeptical. In terms of auditor characteristics, those who are inherently more skeptical rely less on their own industry expertise to take skeptical action than auditors who are inherently less skeptical. In contrast, high trait skepticism counters the negative effect of Machiavellianism on skeptical actions.

Rank

Skeptical Intentions. Multi-group analyses (untabulated) show no interactive relationships between auditors' rank and cognitive processing attributes.

Skeptical Actions. We find that the association between audit firm *QUALITY_CONTROL* and engagement-specific *SKEPTICAL_ACTIONS* is only positive for staff (b_1 = 0.288), while not being significantly different from zero for seniors, managers, and partners (z = -0.49, z = 1.15, z = 0.19, respectively, $\Delta\chi^2$ = 13.04, p = 0.005). Conversely, we find that the association between engagement-specific *MOTIVATION* and engagement-specific *SKEPTICAL_ACTIONS* is stronger for partners (b_4 = 0.355) than for managers (b_3 = 0.148) and seniors (b_2 = 0.253), while the association for staff is not significant (z = 1.26, $\Delta\chi^2$ = 10.61, p = 0.001). Further, the association between *AUDIT_KNOWLEDGE* and engagement-specific *SKEPTICAL_ACTIONS* is stronger for partners (b_4 = 0.362) than for managers (b_3 = 0.110) and seniors (b_2 = 0.006), while the effect for staff is not significantly different (z = 0.80, $\Delta\chi^2$ = 12.58, p = 0.006).

GENDER and BIG_4

Multi-group analyses (untabulated) show no interactive relationships between *GENDER* and general *INTENTION* to behave skeptically or engagement-specific

SKEPTICAL_ ACTIONS. Multi-group analyses (untabulated) also show no interactive relationships between *BIG_4* and *INTENTION* or *SKEPTICAL_ ACTIONS* except for *FIRM_ORIENTATION*, which is positively associated with *SKEPTICAL_ ACTIONS* for auditors of Big 4 firms ($b_2 = 0.259$), while not being statistically significantly different from zero for auditors of other firms ($z = -0.43$, $\Delta\chi^2 = 12.32$, $p < 0.001$).

V. CONCLUSIONS AND LIMITATIONS

Relying on prior conceptual models of auditors' skepticism, we provide field-based evidence from more than 600 auditors across ranks from six audit firms on the antecedents to skeptical actions. In the context of the specific engagements under study, we find that several situational characteristics are associated with auditors taking more skeptical actions, particularly the extent to which individuals within the audit firm exhibit a professional orientation, the extent to which the audit firm's quality control system prevents quality-threatening behaviors, and the extent to which the auditor reports feeling accountable while working on the engagement. These situational characteristics are consistent with new standards on quality management (the IAASB's International Standards on Quality Management [ISQM 1 and 2), the revised ISA 220, and the PCAOB's proposed standard on quality control, which reminds auditors to proactively identify and manage risks concerning audit quality (PCAOB QC 1000). These findings also illustrate the situational importance of instilling values of professional skepticism within audit firms' culture (see also Alberti et al. 2022; Andiola, Downey, and Westermann 2020), and confirm the expectation from Hurtt et al. (2013) that auditors' feelings of accountability are positively associated with skeptical actions.

Further, we find that client identification (e.g., "when I talk about this client, I usually say 'we' rather than 'they'") emerged as the only client characteristic in the context of the engagement being asked about that is associated with engagement-specific skeptical actions, illustrating the importance of maintaining independence while conducting skeptical actions.

Concerning individual auditor characteristics, we find direct, positive associations of trait skepticism, moral courage, motivation, audit knowledge, and industry expertise with skeptical actions. Further, we find interactive effects such that auditors with stronger trait skepticism rely less on situational or other individual characteristics to induce them to act more skeptically; thus, auditor training requires measuring auditors' skepticism and using it to tailor associated interventions. While traits such as skepticism and moral courage are difficult for audit firms to control, motivation can increase via incentives or disincentives for certain behaviors, while knowledge about accounting measurement and valuation, risk of misstatement due to fraud, and the application of analytical procedures, along with industry expertise can increase with the allocation of audit firm resources and individual auditor effort. Our results may provide the impetus for including measures of individual auditor traits in future research designs examining factor(s) related to antecedents of skepticism that interact with trait skepticism.

Interestingly, our findings suggest that some antecedents of skeptical actions may differ across ranks. For example, we find that audit firm quality control matters more for staff, while motivation for a specific engagement matters more partners. We speculate that staff may focus on audit firm quality control because relevant structural procedures affect their performance and oversight from superiors (e.g., controls that discourage false sign-offs, 'ghost tickmarking', inadequate research on technical issues, and the acceptance of weak client explanations). The motivation to perform well on the engagement may be especially salient to partners because of expectations resulting in various dimensions of accountability. We encourage future research to empirically investigate these speculations and more generally why antecedents of skeptical actions may differ across ranks.

Our overarching goal in conducting this research has been to integrate conceptual ideas from prior studies on auditor professional skepticism with comprehensive variable

measurement, and data from a large number of practicing auditors and the engagements on which they work. Our results allow us to extend and clarify prior research by providing field-based evidence on previously hypothesized relationships. We confirm the importance of situational, client, and auditor characteristics in the development of skeptical judgments and subsequent actions. We also validate the importance of cognitive processing and the mediating role of intentions in how situational, client and auditor characteristics influence decisions in audit practice where professional skepticism is key to audit quality.

Regarding cognitive processing, while the Theory of Planned Behavior does not provide guidance on interventions that may be most effective (e.g., enhancing partner communication [Harding and Trotman 2017], improving evaluation and reward systems [Brazel et al. 2016], or changing auditors' mindsets [Griffith, Hammersley, Kadous and Young 2015]), it does help to identify where to target interventions. Auditors face many social pressures (Donnelly and Donnelly 2023), and this web of accountability (Gibbins and Newton 1994) may make it difficult for auditors to develop an appropriate skeptical mindset. Because our results reveal the importance of social pressure, we encourage research that examines how subjective norms differ based on sources of accountability and how accountability-based interventions may facilitate skepticism.

In closing, we acknowledge certain limitations to our research. First, when our auditor participants responded to the experiential survey, their answers may inaccurately represent their actual choices in practice. For example, recall of answers to questions concerning intentions to act skeptically or actual skeptical behaviors may be inaccurate because these behaviors are not costless in practice. Second, due to client-confidentiality constraints, we were not allowed to directly oversee our sample selection and only asked a few questions about client characteristics. Further, the sample selection is biased because we requested that firms begin their selections by first choosing partners whose engagements were to be the subject of within-

firm inspection. However, when we remove observations subject to within-firm inspection, we obtain essentially identical results. Third, while we have undertaken several procedures to mitigate the risk of common-method bias, it cannot be eliminated entirely as our data comes from each individual auditor's perceptions of and recalls about past engagement experiences (Campbell and Fiske 1954). Other team members might have made different assessments (Ericsson and Simon 1980). Finally, we cannot unequivocally determine the causality underlying some of our inferences. For example, when we observe that partners and managers are more skeptical, it is not clear whether auditors with more skepticism are simply more likely to stay in the auditing profession, or whether these results are due to auditors truly becoming more skeptical throughout their careers. We encourage additional research to resolve these issues.

REFERENCES

Autoriteit Financiële Markten (AFM) 2014. *Uitkomsten onderzoek kwaliteit wettelijke controles Big 4-accountantsorganisaties*. Amsterdam, The Netherlands: AFM.

AICPA. 2012. Performing audit procedures in response to assessed risks and evaluating the audit evidence obtained. AU-C Section 330.

Ajzen, I. 1985. From intentions to actions: A theory of planned behavior. In *Action Control* by J. Kuhl and J. Beckmann, Editors. Springer, Berlin.

Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50 (2): 179–211.

Ajzen, I. 2006. Constructing a theory of planned behavior questionnaire. Available online at: https://www.researchgate.net/publication/235913732_Constructing_a_Theory_of_Planned_Behavior_Questionnaire.

Ajzen, I. 2012. The theory of planned behavior. In P. A. M. Lange, A. W. Kruglanski, and E. T. Higgins (Eds.), *Handbook of Theories of Social Psychology* Vol. 1: pp. 438– 459. London, UK: Sage.

Alberti, C.T., J.C. Bedard, O. Bik, and A. Vanstraelen. 2022. Audit firm culture: Recent developments and trends in the literature. *European Accounting Review* 31 (1): 59-109.

Andiola, L.M., D.H. Downey, and K.D. Westermann. 2020. Examining Climate and Culture in Audit Firms: Insights, Practice Implications, and Future Research Directions. *Auditing: A Journal of Practice & Theory* 39 (4): 1-29.

Bagozzi, R. P., and Y. Yi. 1990. Assessing method variance in multitrait-multimethod matrices: The case of self-reported affect and perceptions at work. *Journal of Applied Psychology* 75: 547-560.

Ballou, B., D. L. Heitger, L. E. Heitger, J. S. Pyzoha, and A. Reffett. 2020. The effects of experience and client-preferred outcomes on accountants' complex loss valuation judgments. *Journal of Forensic Accounting Research* 5 (1): 21-35.

Bamber, E.M., and V.M. Iyer. 2007. Auditors' identification with their clients and its effect on auditors' objectivity. *Auditing: A Journal of Practice & Theory* 26 (2): 1-24.

Bandura, A. 1977. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* 84: 191-215.

Bandura, A. 1982. Self-efficacy mechanism in human agency. *American Psychologist* 37 (2): 122-147.

Barr-Pulliam, D., J. Brazel, J.B. McCallen, and K. Walker. 2021. Data analytics and skeptical actions: The countervailing effects of false positives and consistent rewards for skepticism. Working paper, North Carolina State University.

Bedard, J.C., M.L. Ettredge, and K.M. Johnstone. 2008. Fee pressure and the longitudinal dynamics of audit engagement budgeting and reporting. *Advances in Accounting* 24: 32-40.

Blay, A.D., E.S. Gooden, M.J. Mellon, and D.E. Stevens. 2018. The usefulness of social norm theory in empirical business ethics research: A review and suggestions for future research. *Journal of Business Ethics* 152: 191-206.

Bleidorn, W., C. J. Hopwoord and R. E. Lucas. 2018. Life events and personality trait change. *Journal of Personality* 86 (1): 83-96.

Brasel, K.R., R.C. Hatfield, E.B. Nickell, and L.M. Parsons. The effect of fraud risk assessment frequency and fraud inquiry timing on auditors' skeptical judgments and actions. *Accounting Horizons* 33 (1): 1-15.

Brazel, J.F., J. Leiby, and T.R. Schaefer. 2022. Do Rewards Encourage Professional Skepticism? It Depends. *The Accounting Review* 97 (4): 131-154.

Brink, A.G., F. Tang, and L. Yang. 2016. The Impact of Estimate Source and Social Pressure on Auditors' Fair Value Estimate Choices. *Behavioral Research in Accounting* 28 (2): 29-40.

Buchan, H.F. 2005. Ethical decision making in the public accounting profession: An extension of Ajzen's theory of planned behavior. *Journal of Business Ethics* 61 (2): 165-181.

Campbell, D. T., and D. W. Fiske. 1959. Convergent and discriminant validation by the multitrait-multimethod matrix. Psychological Bulletin 56 (2): 81-105.

Carpenter, T. D., and J. L. Reimers. 2013. Professional skepticism: The effects of a partner's influence and the level of fraud indicators on auditors' fraud judgments and actions. *Behavioral Research in Accounting* 25 (2): 45–69.

Christ, M. Y. 1993. Evidence on the nature of audit planning problem representations: An examination of auditor free recalls. *The Accounting Review* 68 (2): 304–322.

Cohen, J.R., D.W. Dalton, and N.L. Harp. 2017. Neutral and presumptive doubt perspectives of professional skepticism and auditor job outcomes. *Accounting, Organizations and Society* 62: 1-20.

Cohen, J.R., L. Milici Gaynor, N.R. Montague, C. Salge, and J.H. Wayne. 2022. The effects of firm guidance on auditors' evaluations of fair value estimates. *Auditing: A Journal of Practice & Theory* 41 (4): 85-105.

DeFond, M., and J. Zhang. 2014. A review of archival auditing research. *Journal of Accounting and Economics* 58 (2): 275–326.

Dennis, S. A., and K. M. Johnstone. 2018. A field experiment examining audit subordinates' knowledge and a partner-led intervention in fraud brainstorming. *Accounting, Organizations and Society* 66: 14-28.

Devlieger, I., A. Mayer, and Y. Rosseel. 2016. Hypothesis testing using factor score regression: A comparison of four methods. *Educational and Psychological Measurement* 76: 741-770.

Donnelly, A.M., and D.P. Donnelly. 2023. A Systematic Review of Experimental Research on Accountability in Auditing. *Behavioral Research in Accounting* 35 (2): 37-72.

Dowling, C. 2009. Appropriate audit support system use: The influence of auditor, audit team, and firm factors. *The Accounting Review* 84 (3): 771-810.

Downey, D., K.M. Obermire., and K.M. Zehms. 2020. Toward an Understanding of Audit Team Distribution and Performance Quality. *Auditing: A Journal of Practice & Theory* 39 (4): 87-112.

Ehrhart, M. G., K. H. Ehrhart, S. C. Roesch, B. G. Chung-Herrera, K. Nadler and K. Bradshaw. 2009. Testing the latent factor structure and construct validity of the Ten-Item Personality Inventory. *Personality and Individual Differences* 47: 900-905.

Ericsson, K. A., and H. A. Simon. 1980. Verbal reports as data. *Psychological Review* 87 (3): 215-251.

Ettredge, M.L., J.C. Bedard, and K.M. Johnstone. 2008. Empirical tests of audit budget dynamics. *Behavioral Research in Accounting* 20 (2): 1–18.

Eutsler, J., A.E. Norris, and G.M. Trompeter. 2018. A live simulation-based investigation: Interactions with clients and their effect on audit judgment and professional skepticism. *Auditing: A Journal of Practice & Theory* 37 (3): 145-162.

Favere-Marchesi, M., and C. Emby. 2018. The alumni effect and professional skepticism: An experimental investigation. *Accounting Horizons* 32(1): 53–63.

Fishbein, M., and I. Ajzen. 2010. *Predicting and Changing Behavior: The Reasoned Action Approach*. Psychology Press (Taylor & Francis): New York.

Flanagan, J. C. 1954. The critical incident technique. *Psychological Bulletin* 51 (4): 327-358.

Fogarty, T. J., A. Reinstein, and R. S. Heath. 2017. Are today's young accountants different? An intergenerational comparison of three psychological attributes. *Accounting Horizons* 31 (2): 83-104.

Gibbins, M., and J. D. Newton. 1994. An empirical exploration of complex accountability in accounting. *Journal of Accounting Research* 32 (2): 165-186.

Gibbins, M., and S. Qu. 2005. Eliciting experts' context knowledge with theory-based experiential questionnaires. *Behavioral Research in Accounting* 17 (1): 71-88.

Gibbins, M., S. Salterio, and A. Webb. 2001. Evidence about auditor-client management negotiation concerning client's financial reporting. *Journal of Accounting Research* 39 (3): 535-563.

Gibbins, M., and K. T. Trotman. 2002. Audit review: Managers' interpersonal expectations and conduct of review. *Contemporary Accounting Research* 19 (3): 411-444.

Glover, S.M. 1997. The influence of time pressure and accountability on auditors' processing of nondiagnostic information. *Journal of Accounting Research* 35: 213–227.

Gosling, S.D., P.J. Rentfrow, and W.B. Jr. Swann. 2003. A very brief measure of the Big-Five personality domains. *Journal of Research in Personality* 37: 504–528.

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.

Hamilton, E.L., and J.L. Smith. 2021. Error or fraud? The effect of omissions on management's fraud strategies and auditors' evaluations of identified misstatements. *The Accounting Review* 96 (1): 225-249.

Hammersley, J. S. 2006. Pattern identification and industry-specialist auditors. *The Accounting Review* 81 (2): 309–336.

Hammersley, J.S., K.M. Johnstone, and K. Kadous. 2011. How do audit seniors respond to heightened fraud risk? *Auditing: A Journal of Practice & Theory* 30 (3): 81-101.

Hardies, K. 2019. Personality, social norms, and sexual harassment in the workplace. *Personality and Individual Differences* 151 (109496): 1-5.

Harding, N., and K. Trotman. 2017. The effect of partner communications of fraud likelihood and skeptical orientation on auditors' professional skepticism. *Auditing: A Journal of Practice & Theory* 36 (2): 111-131.

Hasson, B., and W.R. Knechel. 2019. Getting from skeptical judgment to skeptical action: A field study of auditor behavior. Working paper, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3429324.

Herda, D.N., and J.J. Lavelle. 2013. Auditor commitment to privately held clients and its effects on value-added audit service. *Auditing: A Journal of Practice & Theory* 32 (1): 113-137.

Hmieleski, K.M. and D. A. Lerner. 2016. The Dark Triad and nascent entrepreneurship: An examination of unproductive versus productive entrepreneurial motives. *Journal of Small Business Management* 54 (S1): 7–32.

Hobson, J.J., M. Stern, and Z.F. Zimbelman. 2019. The benefit of mean auditors: The influence of social interaction and the Dark Triad on unjustified auditor trust. *Contemporary Accounting Research* 37 (2): 1217-1247.

Hooper, D., J. Coughlan, and M. R. Mullen. 2008. Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods* 6 (1): 53-60.

Hu, L.T., and P. M. Bentler. 1998. Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods* 3 (4): 424-453.

Hurtt, R.K. 2010. Development of a scale to measure professional skepticism. *Auditing: A Journal of Practice and Theo*ry 29 (1): 149–171.

Hurtt, R.K., H. Brown-Liburd, C.E. Earley, and G. Krishnamoorthy. 2013. Research on auditor professional skepticism: Literature synthesis and opportunities for future research. *Auditing: A Journal of Practice and Theory* 32: 45–97.

International Auditing and Assurance Standards Board (IAASB ISA 200). Overall objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing. ISA 200. New York, NY: IFAC.

———. (IAASB ISA 220). 2020. Quality management for an audit of financial statements. ISA 220. New York, NY: IFAC.

———. (IAASB ISA 240). 2004. The auditor's responsibility to consider fraud in an audit of financial statements. ISA 240. New York, NY: IFAC.

———. (IAASB ISA 200). 2012. Overall Objectives of the Independent Auditor and the Conduct of an Audit in Accordance with International Standards on Auditing. ISA 200. New York, NY: IFAC.

_____. (IAASB ISA 330). The auditor's responses to assessed risks. New York, NY: IFAC.

———. 2015. Enhancing Audit Quality in the Public Interest. A Focus on Professional Skepticism, Quality Control, and Group Audits. Available at: https://www.ifac.org/system/files/publications/files/IAASB-Overview-Invitation-to-Comment-Enhancing-Audit-Quality.pdf

_____. 2017. Toward enhanced professional skepticism. Observations of the IAASB-IAESB-IESBA Professional Skepticism Working Group. https://www.iaasb.org/publications/toward-enhanced-professional-skepticism-0

_____. 2020. Quality management for firms that perform audits or reviews of financial statements, or other assurance or related services engagements. ISQM 1. New York, NY: IFAC.

_____. 2020. Engagement quality reviews. ISQM 2. New York, NY: IFAC.

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.

Isaacs, K., N.P. Mota, J. Tsai, I. Harpaz-Rotem, J.M. Cook, P.D. Kirwin, J.H. Krystal, S.M. Southwick, and R.H. Pietrzak. 2017. Psychological resilience in U.S. military veterans: A 2-year, nationally representative prospective cohort study. *Journal of Psychiatric Research* 84: 301-309.

John, O. P., R. W. Robins and L. A. Pervin (Eds.). 2008. *Handbook of personality: Theory and research*. New York, NY: Guilford Press.

Jones, D.N. and D.L. Paulhus. 2014. Introducing the Short Dark Triad (SD3): A brief measure of dark personality traits. *Assessment* 21 (1): 28–41.

Kadous, K., C.J. Nolder, and M. Peecher. 2018. The role of attitudes in financial audits and directions for future research. *The Handbook of Attitudes*. Taylor Francis, New York.

Kadous, K., and Y.D. Zhou. 2019. How does intrinsic motivation improve auditor judgment in complex audit tasks? *Contemporary Accounting Research* 36 (1): 108-131.

Kelley, T., and L. Margheim. 1990. The impact of time budget pressure, personality, and leadership variables on dysfunctional auditor behavior. *Auditing: A Journal of Practice & Theory* 9 (2): 21-42.

Kerckhofs, L., K. Hardies, M.-L. Vandenhaute, and S. Ceustermans. 2020. Starting your career at an accounting firm: The role of personality in explaining career starts. *Accounting Horizons*.

Khan, M. J., and E. Oczkowski. 2021. The link between trait and state professional skepticism: A review of the literature and a meta-regression analysis. *International Journal of Auditing* 1-24.

Kline, R.B. 2016. *Principles and Practice of Structural Equation Modeling, 4th Edition.* The Guildford Press. New York, NY.

Knechel, W. R., G. V. Krishnan, M. Pevzner, L. B. Shefchik, and U.K. Velury. 2013. Audit quality: Insights from the academic literature. *Auditing: A Journal of Practice and Theory* 32 (S1): 385–421.

Lord, A.T., and F.T. DeZoort. 2001. The impact of commitment and moral reasoning on auditors' responses to social influence pressure. *Accounting, Organizations and Society* 26 (3): 215-235.

MacKenzie, S. B., and P. M. Podsakoff. 2012. Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing* 88 (4): 542-555.

Majors, T. 2013. Communicating measurement uncertainty: An experimental study of financial reporting implications for managers and investors. Dissertation, University of Texas – Austin. Later published as: Majors, T. 2016. The interaction of communicating measurement uncertainty and the Dark Triad on managers' reporting decisions. *The Accounting Review* 91 (3): 973-992.

Malone, C. F. and R. W. Roberts. 1996. Factors associated with the incidence of reduced audit quality behaviors. *Auditing: A Journal of Practice & Theory* 15 (2): 49-64.

Nelson, M. W., J. A. Eliott, and R. L. Tarpley. 2002. Evidence from auditors about managers' and auditors' earnings management decisions. *The Accounting Review* 77 (Supplement): 175-202.

Nelson, M. 2009. A model and literature review of professional skepticism in auditing. *Auditing: A Journal of Practice and Theory* 28 (2): 1–34.

Nolder, C.J., and K.L. Blankenship. 2018. Application of attitude research across domains: Current state of knowledge and future directions. *The Handbook of Attitudes*. Routledge, New York.

Nolder, C.J., and K. Kadous. 2018. Grounding the professional skepticism construct in mindset and attitude theory: A way forward. *Accounting, Organizations and Society* 67: 1–14.

Noviyanti, S., and L. Winata. 2015. The role of "tone at the top" and knowledge of fraud on auditors' professional skepticism behavior. *Contemporary Management Research* 11 (1): 55-74.

Otley, D., and B. Pierce. 1996. The operation of control systems in large audit firms. *Auditing: A Journal of Practice & Theory* 15: 65-83.

Podsakoff, P. M., S. B Mackenzie, J. Y. Lee, and N. P. Podsakoff. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88 (5): 879-903.

Ponemon, L.A. 1992. Auditor underreporting of time and moral reasoning: An experimental lab study. *Contemporary Accounting Research* 9 (1): 171-189.

Prusik, M., and M. Szulawski. 2019. The relationship between the Dark Triad personality traits, motivation at work, and burnout among HR recruitment workers. *Frontiers in Psychology* 10 (1290): 1-12.

Public Company Accounting Oversight Board (PCAOB) AS 1015. Due professional care in the performance of work: https://pcaobus.org/Standards/Auditing/Pages/AS1015.aspx

_____. AS 2101. Audit Planning.

_____. AS 2300. Audit procedures in response to risks – Nature, timing, and extent.

———. 2003. Consideration of fraud in financial statement audits. Auditing Standard No. 2401. Washington, DC: PCAOB.

———. 2006. Due professional care in the performance of work. Auditing Standard No. 1015. Washington, DC: PCAOB.
———. 2012. Staff Audit Practice Alert on Maintaining and Applying Professional Skepticism in Audits. Available at: http://pcaobus.org/News/Releases/Pages/12042012_SAPA10.aspx
———. 2015. Staff Inspection Brief. Vol.2015/2, October 2015. Available at: http://pcaobus.org/Inspections/Documents/Inspection-Brief-2015-2-2015-Inspections.pdf
———. 2018. Release No. 104-2019-026A. Inspection of Anton & Chia, LLP.
———. 2019a. Release No. 104-2019-085A. Inspection of BDO USA, LLP.
———. 2019b. Release No. 105-2019-031. Order instituting disciplinary proceedings, making findings, and imposing sanctions. Washington, DC: PCAOB.
———. 2022. QC 1000. A firm's system of quality control. Washington, DC: PCAOB.
———. 2023. Professional competence and skepticism are essential to quality audits. Spotlight, April. See https://www.accountingtoday.com/news/pcaob-stresses-need-for-more-auditor-skepticism.
Quadackers, L., M. Groot, and A. Wright. 2014. Auditor's professional skepticism: Neutrality versus presumptive doubt. *Contemporary Accounting Research* 31 (3): 639–657.
Rasso, J.T. 2015. Construal instructions and professional skepticism in evaluating complex estimates. *Accounting, Organizations and Society* 46: 44-55.
Romero, E., P. V. J. A. Gómez-Fraguela and L. López-Romero. 2012. Measuring personality traits with ultra-short scales: A study of the Ten Item Personality Inventory (TIPI) in a Spanish sample. *Personality and Individual Differences* 53: 289-293.
Rönkkö, M. and E. Cho. 2022. An Updated Guideline for Assessing Discriminant Validity. *Organizational Research Methods* 25 (1): 6-47.
Rotter, J. B. 1967. A new scale for the measurement of interpersonal trust. *Journal of Personality* 35: 651–665.
Rouwelaar, J. B. and I. De Loo. 2018. The influence of management accountants on managerial decisions. *Journal of Applied Accounting Research* 19: 442-464.
Securities and Exchange Commission (SEC). 2022. Speech by Paul Munter, Acting Chief Accountant, "The Auditor's Responsibility for Fraud Detection". https://www.sec.gov/news/statement/munter-statement-fraud-detection-101122.
Sekerka, L.E., R.P. Bagozzi, and R. Charnigo. 2009. Facing ethical challenges in the workplace: Conceptualizing and measuring professional moral courage. *Journal of Business Ethics* 89 (4): 565–579.
Solomon, I., M.D. Shields, and O.R. Whittington. 1999. What do industry-specialist auditors know? *Journal of Accounting Research* 37 (1): 191-208.
Stevens, E., R. Moroney, and J. Webster. 2019. Professional skepticism: The combined effect of partner style and team identity salience. *International Journal of Auditing* 23: 279-291.
Sweeney, B., Arnold, D. and B. Pierce. 2010. The impact of perceived ethical culture of the firm and demographic variables on auditors' ethical evaluation and intention to act decisions. *Journal of Business Ethics* 93 (4): 531–551.
Tabachnick, B.G. and L.S. Fidell. 2013. *Using Multivariate Statistics.* Boston: Pearson.
Tang, J., and K. E. Karim. 2019. Financial fraud detection and big data analytics – Implications on auditors' use of fraud brainstorming session. *Managerial Auditing Journal* 34 (3), 324-337.
Ullman, J.B. 2001. *Structural Equation Modeling.* In B.G. Tabachnick and L.S. Fidell, *Using Multivariate Statistics* 4th Edition. Needham Heights, MA: Allyn & Bacon.

Vedel, A. and D. K. Thomsen. 2017. The Dark Triad across academic majors. *Personality and Individual Differences* 116: 86-91.

West, S.G., A.B. Taylor, and W. Wu. 2012. Model fit and model selection in structural equation modeling. In R.H. Hoyle (Ed.), *Handbook of Structural Equation Modeling*. The Guilford Press.

Wheaton, B., B. Muthen, D. Alwin, and G. Summers. 1977. Assessing reliability and stability in panel models. *Sociological Methodology* 8 (1): 84-136.

Widaman, K.F. and W. Revelle. 2023. Thinking thrice about sum scores, and then some more about measurement and analysis. *Behavioral Research Methods* 55: 788-806.

Winardi, R.D., A. Mustikarini, and Y. Permana. 2017. Do auditor professional scepticism and client narcissism affect fraud risk assessment? *The Indonesian Journal of Accounting Research* 20 (1): 71-98.

Wissing, B. G., and M.A. Reinhard. 2019. The Dark Triad and deception perceptions. *Frontiers in Psychology* 10 (1811): 1-7.

Wittek, R., T. van der Zee, and P. Mühlau. 2008. Client acceptance decisions of Dutch auditing partners. *Journal of Management and Governance* 12 (1): 93–115.

Woods, S. A., B. Wille, C. H. Wu, F. Lievens, and F. De Fruyt. 2019. The influence of work on personality trait development: The demands-affordances transactional (DATA) model, an integrative review, and research agenda. *Journal of Vocational Behavior* 110 (part B): 258-271.

Wrightsman, L.S. 1991. Interpersonal trust and attitudes toward human nature. In: *Measures of Personality and Social Psychological Attitudes*, eds. J.P. Robinson, P.R. Shaver and L.S. Wrightsman, 373-412. Volume 1 in Measures of Social Psychological Attitudes Series.

Ying, S.X., C. Patel, and P. Pan. 2019. The influence of peer attitude and inherent skepticism on auditors' skeptical judgments. *Accounting and Business Research* 50 (2): 179-202.

Ying, S.X., C. Patel, and A.L.D. Cruz. 2022. The influence of partners' known preferences on auditors' sceptical judgments: The moderating role of perceived social influence pressure. *Accounting & Finance* 63 (3): 1-23.

FIGURE 1
Comparisons Across Conceptual Models of Auditors' Professional Skepticism

Nelson (2009)	Hurtt et al. (2013)	Nolder & Kadous (2019)
SITUATIONAL CHARACTERISTICS		
Financial statements Auditing standards	Client-audit firm tenure Legal liability International issues Accountability to reviewers and regulators	Financial statements Audit firm culture Audit firm methodology
CLIENT CHARACTERISTICS		
Incentives	Management integrity Client industry, complexity, riskiness Corporate governance Client preferences Relationship with auditor	Client Pressures
AUDITOR CHARACTERISTICS		
Individual traits Knowledge Experience and training	Training Motivation Independence Moral reasoning Affect	Individual traits Knowledge and ability Motivation - skeptical mindset and attitude
		COGNITIVE PROCESSING: Attitudes Subjective norms Perceived behavioral control
SKEPTICAL JUDGMENT		
		INTENTIONS
SKEPTICAL ACTIONS		

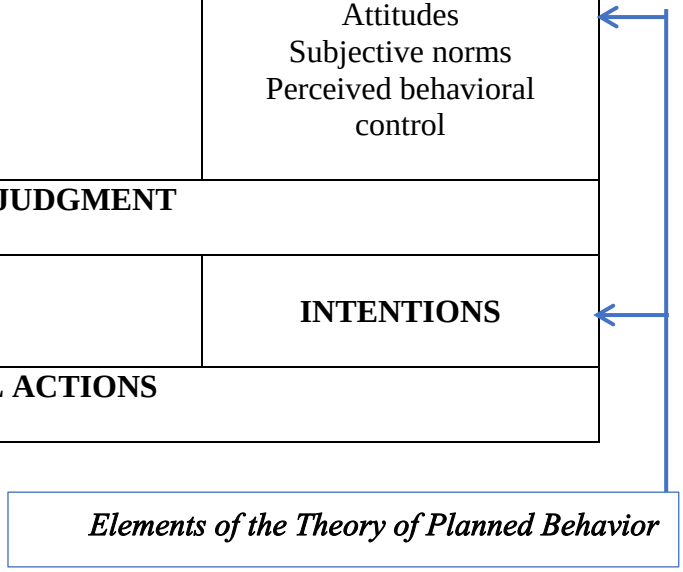

FIGURE 2

Variable Measurement Corresponding to Conceptual Models of Auditors' Professional Skepticism

<table>
<tr><th>Nelson (2009)</th><th>Hurtt et al. (2013)</th><th>Nolder & Kadous (2019)</th></tr>
<tr><td colspan="3">SITUATIONAL CHARACTERISTICS
ETHICAL_CULTURE, AQT_BEHAVIORS, FIRM_ORIENTATION, QUALITY_CONTROL, APPRAISAL_PS, ACCOUNTABILITY, BIG_4</td></tr>
<tr><td colspan="3">CLIENT CHARACTERISTICS
CLIENT_IMPORTANCE, CLIENT_IDENTIFICATION, BUDGET_PRESSURE</td></tr>
<tr><td colspan="3">AUDITOR CHARACTERISTICS
Trait skepticism (HPSS, RIT), Demographics (AGE, GENDER), Personality (MORAL_COURAGE, EXTRAVERSION, AGREEABLENESS, CONSCIENTIOUSNESS, EMOTIONAL_STABILITY, OPENNESS, MACHIAVELLIANISM, PSYCHOPATHY, NARCISSISM), MOTIVATION, Knowledge/Experience/Training (EXPERIENCE_YRS or AGE, AUDIT_KNOWLEDGE)</td></tr>
<tr><td colspan="2"></td><td>COGNITIVE PROCESSING
Elements of Theory of Planned Behavior
ATTITUDE, SUBJECTIVE_NORM, PERCEIVED_BEHAVIORAL_CONTROL</td></tr>
<tr><td colspan="3">SKEPTICAL JUDGMENT</td></tr>
<tr><td colspan="2"></td><td>INTENTION
I intend to maintain professional skepticism throughout my next audits.
Professional skepticism is an important topic to me.
I am well enough informed to apply professional skepticism throughout an audit .
I often think about professional skepticism.</td></tr>
<tr><td colspan="3">SKEPTICAL_ACTIONS</td></tr>
<tr><td colspan="2">I challenged the reliability of information given by management.
I extensively searched for evidence in order to improve audit quality.
I was willing to challenge management assertions.
I searched for evidence opposing management's point of view.</td><td>I was alert to conditions that could indicate possible material misstatements.
I was critical of audit evidence gathered by other members of the engagement team.
I challenged the judgments of other members of the engagement team.
I searched for evidence supporting management's point of view.</td></tr>
</table>

TABLE 1
Sample Composition

Panel A: Sample selection, missing data, and response rate

	Total	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6
Selected engagements	**342**	140	49	78	26	36	13
Selected auditors within engagements	**1,447**	537	202	436	69	178	25
Auditor respondents	**858**	302	122	269	59	90	16
Auditor response rate	**59.3%**	56.2%	60.4%	61.7%	85.5%	50.6%	64.0%
Auditor responses with missing data	**(195)**	(59)	(32)	(58)	(12)	(29)	(5)
Final sample of auditors	**663**	243	90	211	47	61	11

Panel B: Percentage and number of responses by rank and by audit firm

Partners	21%	**139**	52	19	43	10	12	3
Managers	26%	**174**	66	9	71	3	25	0
Seniors	16%	**103**	15	35	6	34	5	8
Staff	37%	**247**	110	27	91	0	19	0
Total	100%	**663**	243	90	211	47	61	11
% by audit firm			36.6%	13.6%	31.8%	7.1%	9.2%	1.7%

This table presents sample composition.

TABLE 2
Descriptive Statistics

Panel A: Overall

N = 663	Mean	Median	Std. Dev.	Min	Max	Chronbach's α
SITUATIONAL CHARACTERISTICS						
ETHICAL_CULTURE	21.4	22	4.1	4	28	0.69
AQT_BEHAVIORS	15.4	16	5.2	5	33	0.84
FIRM_ORIENTATION	30.1	30	3.8	14	35	0.89
QUALITY_CONTROL	21.2	21	2.4	14	30	0.71
APPRAISAL_PS	19.4	20	5.1	4	28	0.85
ACCOUNTABILITY	31.9	33	5.7	6	42	0.90
BIG_4	0.5	1.0	0.5	0	1	n/a
CLIENT CHARACTERISTICS						
CLIENT_IMPORTANCE	4.1	4	1.5	1	7	n/a
CLIENT_IDENTIFICATION	17.8	17.0	6.5	7.0	43.0	0.87
BUDGET_PRESSURE	11.2	11.0	4.0	3.0	21.0	0.64
AUDITOR CHARACTERISTICS						
HPSS	137.3	138	10.6	103	168	0.84
RIT-Distrust	78.0	77	8.5	54	107	0.76
PMC	79.2	79	10.6	52	105	0.91
AGE	32.4	29	9.8	19	64	n/a
GENDER	0.3	0	0.4	0	1	n/a
EXTRAVERSION	9.2	9	3.0	2	14	n/a
AGREEABLENESS	7.9	8	1.7	2	13	n/a
CONSCIENTIOUSNESS	11.4	12	2.0	1	14	n/a
EMOTIONAL_STABILITY	10.7	11	2.3	3	14	n/a
OPENNESS	9.6	10	2.2	1	14	n/a
MACHIAVELLIANISM	25.4	26	5.4	4	44	0.72
NARCISSISM	25.6	26	4.4	13	38	0.59
PSYCHOPATHY	18.6	18	5.1	7	34	0.70
MOTIVATION	5.7	6	0.9	2	7	n/a
EXPERIENCE_YRS	10.2	6	9.4	0	41	n/a
INDUSTRY_EXPERTISE	4.2	5	1.6	1	7	n/a
AUDIT_KNOWLEDGE	14.4	15	3.4	3	21	0.94
KNOW_VALUATION	4.6	5	1.4	1	7	n/a
KNOW_FRAUD	4.7	5	1.3	1	7	n/a
KNOW_ANALYTICAL_PROC	5.1	5	1.1	1	7	n/a
COGNITIVE PROCESSING						
ATTITUDE	28.4	29	3.7	9	35	0.62
SUBJECTIVE_NORMS	17.7	18	2.1	9	21	0.71
PBC	15.3	15	2.9	7	21	0.34
SKEPTICAL JUDGMENT						
INTENTION	23.7	24	2.5	12	28	0.67
SKEPTICAL ACTIONS						
SKEPTICAL_ACTIONS	44.0	45	5.6	24	56	0.86

TABLE 2 (continued)
Descriptive Statistics

Panel B: By Skepticism Level

N = 663	*SKEPTICAL_ACTIONS* < median (N = 304)		*SKEPTICAL_ACTIONS* > median (N = 359)		t-test or X^2
	Mean	sd	Mean	sd	(p-value)
SITUATIONAL CHARACTERISTICS					
ETHICAL_CULTURE	20.4	3.9	22.1	4.2	-5.34 (<0.001)
AQT_BEHAVIORS	16.2	4.6	14.7	5.5	3.63 (<0.001)
FIRM_ORIENTATION	28.8	4.2	31.2	3.1	-8.20 (<0.001)
QUALITY_CONTROL	24.5	4.2	25.8	4.5	-3.90 (<0.001)
APPRAISAL_PS	18.5	4.8	20.2	5.3	-4.35 (<0.001)
ACCOUNTABILITY	29.4	5.8	34.0	4.5	-11.60 (<0.001)
BIG_4	0.4	0.5	0.6	0.5	10.40 (0.001)
CLIENT CHARACTERISTICS					
CLIENT_IMPORTANCE	4.0	1.4	4.3	1.5	-2.53 (0.012)
CLIENT_IDENTIFICATION	18.1	6.4	17.5	6.7	1.03 (0.300)
BUDGET_PRESSURE	11.3	3.9	11.1	4.0	0.78 (0.435)
AUDITOR CHARACTERISTICS					
HPSS	133.2	10.2	140.78	9.6	-9.87 (<0.001)
RIT-Distrust	78.1	8.0	78.0	9.6	0.17 (0.864)
PMC	74.8	10.0	83.0	9.7	-10.62 (<0.001)
AGE	29.8	8.9	34.6	10.1	-6.42 (<0.001)
GENDER	0.3	0.5	0.2	0.4	2.70 (0.101)
EXTRAVERSION	8.8	3.0	9.5	2.9	-3.01 (0.003)
AGREEABLENESS	8.1	1.7	7.8	1.8	2.06 (0.040)
CONSCIENTIOUSNESS	11.2	2.0	11.6	2.0	-2.91 (0.004)
EMOTIONAL_STABILITY	10.4	2.3	10.9	2.3	-2.61 (0.009)
OPENNESS	9.2	2.2	10.0	2.1	-5.18 (<0.001)
MACHIAVELLIANISM	26.3	5.0	24.6	5.6	4.02 (<0.001)
NARCISSISM	25.2	4.1	25.9	4.5	-2.00 (0.046)
PSYCHOPATHY	19.4	5.2	18.0	4.8	3.70 (<0.001)
MOTIVATION	5.4	0.9	6.0	0.7	-8.13 (<0.001)
EXPERIENCE_YRS	7.5	8.3	12.4	9.8	-6.85 (<0.001)
INDUSTRY_EXPERTISE	3.7	1.6	4.7	1.5	-8.40 (<0.001)
AUDIT_KNOWLEDGE	14.4	3.7	16.3	3.0	-7.44 (<0.001)
KNOW_VALUATION	4.8	1.3	5.5	1.1	-7.32 (<0.001)
KNOW_FRAUD	4.9	1.3	5.5	1.1	-6.39 (<0.001)
KNOW_ANALYTICAL_PROC	4.7	1.3	2.4	1.0	-7.23 (<0.001)
COGNITIVE PROCESSING					
ATTITUDE	27.5	3.7	29.2	3.6	-5.88 (<0.001)
SUBJECTIVE_NORMS	17.1	2.2	18.2	1.8	-6.93 (<0.001)
PBC	14.9	2.7	15.6	3.0	-3.09 (0.002)
SKEPTICAL JUDGMENT					
INTENTION	22.8	2.7	24.5	2.1	-9.38 (<0.001)

This table summarizes descriptive statistics. *p*-values are two-tailed.

TABLE 3
Correlation Matrix

Panel A: *SKEPTICAL_ACTIONS* and Situational Characteristics

	SKEPTICAL_ACTIONS	*ETHICAL_CULTURE*	*AQT_BEHAVIORS*	*FIRM_ORIENTATION*	*QUALITY_CONTROL*	*APPRAISAL_PS*	*ACCOUNTABILITY*	*BIG_4*
SKEPTICAL_ACTIONS								
ETHICAL_CULTURE	0.28*							
AQT_BEHAVIORS	-0.20*	-.46*						
FIRM_ORIENTATION	0.45*	.45*	-.38*					
QUALITY_CONTROL	0.26*	.47*	-.43*	.40*				
APPRAISAL_PS	0.22*	.47*	-.41*	.34*	.38*			
ACCOUNTABILITY	0.48*	.31*	-.24*	.42*	.21*	.33*		
BIG_4	0.19*	.15*	-.05	.20*	.10	-.09	0.03	

Panel B: *SKEPTICAL_ACTIONS* and Client Characteristics

	SKEPTICAL_ACTIONS	*CLIENT_IMPORTANCE*	*CLIENT-IDENTIFICATION*	*BUDGET_PRESSURE*
SKEPTICAL_ACTIONS				
CLIENT_IMPORTANCE	0.10*			
CLIENT_IDENTIFICATION	-0.12*	0.19*		
BUDGET_PRESSURE	-0.06	0.08	0.09	

Panel C: *SKEPTICAL_ACTIONS* and Auditor Characteristics

	SKEPTICAL_ACTIONS	*HPSS*	*RIT-Distrust*	*PMC*	*AGE*	*GENDER*	*EXTRAVERSION*	*AGREEABLENESS*	*CONSCIENTIOUSNESS*	*EMOTIONAL_STABILITY*	*OPENNESS*	*MACHIAVELLIANISM*
SKEPTICAL_ACTIONS												
HPSS	.44*											
RIT-Distrust	.00	.06										
PMC	.46*	.49*	-.07									
AGE	.27*	.21*	-.21*	.32*								
GENDER	-.07	- .08	.09	.12*	- .28*							
EXTRAVERSION	.18*	.18*	-.01	.12*	.03	.08						
AGREEABLENESS	-.04	- .04	-.10*	.03	.11*	.11*	.06					
CONSCIENTIOUSNESS	.12*	.26*	.04	.23*	.08	.14*	.04	.05				
EMOTIONAL_STABILITY	.12*	.22*	-.15*	.15*	.25	- .26*	- .03	.04	.24*			
OPENNESS	.24*	.31*	-.05	.25*	.15*	- .02	.35*	.04	.13*	.20*		
MACHIAVELLIANISM	-.17*	- .19*	.19*	- .18*	- .21*	- .08	- .05	- .09	- .17*	- .10*	- .14*	

	SKEPTICAL_ACTIONS	*PSYCHOPOTHY*	*NARCISSISM*	*MOTIVATION*	*INDUSTRY_EXPERTIS*	*EXPERIENCE_YRS*	*KNOW_VALUATION*	*KNOW_FRAUD*	*KNOW_ANALYTICAL_ PROC*
SKEPTICAL_ACTIONS									
PSYCHOPATHY	-.16*								
NARCISSISM	.11*	.34*							
MOTIVATION	.40*	-.22*	.00						
INDUSTRY_EXPERTISE	.36*	-.02	.13*	.29*					
EXPERIENCE_YRS	.29*	-.16*	.03	.25*	.45*				
KNOW_VALUATION	.37*	-.08	.04	.16*	.39*	.39*			
KNOW_FRAUD	.31*	-.08	.01	.14*	.35*	.35*	.86*		
KNOW_ANALYTICAL_PROC	.35*	-.08	-.00	.15*	.29*		.83*	.82*	

Panel D: *SKEPTICAL_ACTIONS* and Cognitive Processing and Skeptical Judgment

	SKEPTICAL_ACTIONS	*ATTITUDE*	*SUBJECTIVE_NORM*	*PBC*	*INTENTION*
SKEPTICAL_ACTIONS					
ATTITUDE	0.32*				
SUBJECTIVE_NORM	0.34*	.35*			
PBC	0.18*	.35*	.34*		
INTENTION	0.43*	0.44*	0.61*	0.25*	

This table presents the correlation matrix. * significant at 0.01 level; *p*-values are two-tailed. See Appendix A for variable definitions.

TABLE 4
Structural Equation Modeling Estimation Alternatives to Answer Research Question

	[Model 1]	[Model 2]	[Model 3]
Dependent variables:	*SKEPTICAL ACTIONS*	*SKEPTICAL ACTIONS*	*SKEPTICAL ACTIONS*
Independent variables:			
SITUATIONAL CHARACTERISTICS			
ETHICAL_CULTURE	-0.004		-0.014
	[-0.11]		[-0.34]
AQT_BEHAVIORS	0.041		0.032
	[1.15]		[0.87]
FIRM_ORIENTATION	0.192***		0.148***
	[5.04]		[3.63]
QUALITY_CONTROL	0.081**		0.092**
	[2.17]		[2.40]
APPRAISAL_PS	-0.009		-0.017
	[-0.22]		[-0.43]
ACCOUNTABILITY	0.176***		0.201***
	[4.56]		[5.01]
BIG_4	0.107***		0.093***
	[3.39]		[2.87]
CLIENT CHARACTERISTICS			
CLIENT_IMPORTANCE	-0.019		-0.025
	[-0.60]		[-0.79]
CLIENT_IDENTIFICATION	-0.080**		-0.074**
	[-2.40]		[-2.15]
BUDGET_PRESSURE	0.035		0.045
	[1.10]		[1.37]
AUDITOR CHARACTERISTICS			
HPSS	0.200***		0.172***
	[5.59]		[4.44]
RIT-Distrust	0.054*		0.053*
	[1.75]		[1.65]
PMC	0.100***		0.090***
	[2.67]		[2.32]
GENDER	-0.008		-0.016
	[-0.25]		[-0.45]
EXTRAVERSION	0.019		0.001
	[0.54]		[0.02]
AGREEABLENESS	-0.073**		-0.069**
	[2.46]		[2.25]
CONSCIENTIOUSNESS	-0.037		-0.052
	[-1.17]		[-1.57]
EMOTIONAL_STABILITY	-0.036		-0.039
	[-1.10]		[-1.15]
OPENNESS	0.034		0.037
	[1.04]		[1.09]
MACHIAVELLIANISM	-0.080**		-0.092**
	[-2.30]		[2.57]

NARCISSISM	0.019		0.033
	[0.52]		[0.87]
PSYCHOPATHY	-0.000		-0.002
	[-0.01]		[-0.06]
MOTIVATION	0.155***		0.150***
	[4.17]		[3.89]
EXPERIENCE_YRS	-0.022		-0.045
	[-0.57]		[-1.10]
AUDIT_KNOWLEDGE	0.120***		0.098***
	[3.46]		[2.69]
INDUSTRY_EXPERTISE	0.148***		0.143***
	[4.22]		[3.96]
COGNITIVE PROCESSING (path to *INTENTION*)			
ATTITUDE		0.282***	0.208***
		[7.37]	[5.24]
SUBJECTIVE_NORMS		0.600***	0.586***
		[17.75]	[9.07]
PBC		0.123***	0.114***
		[3.41]	[3.22]
SKEPTICAL JUDGMENT			
INTENTION		0.604***	0.168***
		[17.20]	[3.60]

N = 663. This table reports the **standardized coefficients** of the full SEM analysis and the [z-scores]. *, ** and *** significant at respectively 0.10, 0.05 and 0.01 level. See Appendix A for variable definitions.

Model 1

X^2 (177) = 299.90, p = 0.001 (relative X^2 = 1.69); RMSEA = 0.033 (confidence interval at 90% = 0.026 – 0.039); CFI = 0.96; SRMR = 0.025. (R^2 = 0.57)

Model 2

X^2 (55) = 92.97, p = 0.001 (relative X^2 = 1.69); RMSEA = 0.033 (confidence interval at 90% = 0.021 – 0.044); CFI = 0.99; SRMR = 0.028. (R^2 = 0.66)

Model 3

X^2 (341) = 702.69, p = 0.001 (relative X^2 = 2.06); RMSEA = 0.041 (confidence interval at 90% = 0.037 – 0.045); CFI = 0.91; SRMR = 0.037. (R^2 = 0.77)

APPENDIX A
Variable Names and Descriptions

Variable Name	Description
SITUATIONAL CHARACTERISTICS	
ETHICAL_CULTURE (Firm-level)	Measure of the extent to which there is a strong ethical culture at the auditing firm; measured on a scale from 1 to 7 based on responses to four underlying items; higher scores indicate a more ethical perceived tone at the top.
AQT_BEHAVIORS (Firm-level)	Measure of extent to which individuals within the audit firm exhibit quality-threatening behaviors; measured on a scale from 1 to 7 based on responses to five underlying items; higher scores indicate a greater extent of quality-threatening behaviors.
FIRM_ORIENTATION (Firm-level)	Measure of extent to which individuals within the audit firm exhibit a professional orientation; measured on a scale from 1 to 7 based on responses to five underlying items; higher scores indicate a more positive professional orientation.
QUALITY_CONTROL (Firm-level)	Measure of extent to which the audit firm's quality control system prevents quality-threatening behaviors; measured on a scale from 1 to 7 based on responses to five underlying items; higher scores indicate a stronger quality control orientation.
APPRAISAL_PS (Firm-level)	Measure of extent to which the audit firm's performance evaluation system rewards applying professional skepticism; measured on a scale from 1 to 7 based on responses to four underlying items; higher scores indicate a performance appraisal system that places more value on the application of professional skepticism.
ACCOUNTABILITY (Engagement-level)	Measure of extent to which the auditor reports feeling accountable while working on the engagement; measured on a scale from 1 to 7 based on responses to six underlying items; higher scores indicate greater feelings of accountability.
BIG_4 (Firm-level)	Dichotomous variable equal to 1 if the audit firm is a member of the Big 4; 0 otherwise.
CLIENT CHARACTERISTICS	
CLIENT_IMPORTANCE (Engagement-level)	Measure of the extent to which auditor perceives the client as important to the audit firm; measured on a single-item scale from 1 to 7 based on responses to the question, "Please estimate the importance of this client to your firm" on a scale from 1 = not at all important to 7 = extremely important.
CLIENT_IDENTIFICATION (Engagement-level)	Measure of the extent to which auditor feels committed to and identifies with the client; measured on a scale from 1 to 5 based on responses to nine underlying items; higher scores indicate stronger commitment to the client.
BUDGET_PRESSURE (Engagement-level)	Measure of the extent to which auditor reports feeling budget pressure while working on the engagement; measured on a scale from 1 to 7 based on responses to three underlying items; higher scores indicate stronger feelings of budget pressure.
AUDITOR CHARACTERISTICS	
HPSS	Hurtt Professional Skepticism scale.
RIT-Distrust	Rotter Interpersonal Trust scale
PMC	Professional Moral Courage scale.
AGE	Auditor age in years.
GENDER	Dichotomous variable equal to 1 if the auditor is female; 0 otherwise.

EXTRAVERSION *AGREEABLENESS* *CONSCIENTIOUSNESS* *EMOTIONAL_STABILITY* *OPENNESS*	Gosling et al. (2003) measures of personality on a scale from 1 (strongly disagree) to 7 (strongly agree); measured as the mean score of answers to the underlying items.
MACHIAVELLIANISM *NARCISSISM* *PSYCHOPATHY*	Jones and Paulhus (2002) measures of personality on a scale from 1 (strongly disagree) to 5 (strongly agree); measured as the mean score of answers to the Short Dark Triad items.
MOTIVATION (Engagement-level)	Measure of extent to which auditor feels a motivation to perform well on the engagement; measured on a single-item scale from 1 to 7 based on responses to the question, "How motivated were you to perform well on this audit engagement?" on a scale from 1 = not at all motivated to 7 = extremely motivated.
RANK	Rank as staff, senior, manager, or partner.
EXPERIENCE_YRS	Auditor experience in years.
INDUSTRY_EXPERTISE (Engagement-level)	Measure of extent to which auditor is an expert in the client's industry; measured on a single-item scale from 1 to 7 based on responses to the question, "To what extent do you consider yourself to be an "industry expert" in the industry of this client?" on a scale from 1 = not at all to 7 = extremely.
Audit Knowledge: *KNOW_VALUATION* *KNOW_FRAUD* *KNOW_ANALYTICAL_PROC*	Measures of knowledge on a scale from 1 (not at all experienced) to 7 (extremely experienced) relating to judgments about measurement and valuation, risk of material misstatement due to fraud, and the application of analytical procedures.
COGNITIVE PROCESSING	
ATTITUDE	Measure of attitude towards professional skepticism on a scale from 1 to 7 based on responses to five underlying items.
SUBJECTIVE_NORMS	Measure of perceived social pressure on a scale from 1 to 7 based on responses to three underlying items.
PERCEIVED_BEHAVIORAL_CONTROL (PBC)	Measure of self-control on a scale from 1 to 7 based on responses to three underlying items.
SKEPTICAL JUDGMENT	
INTENTION	Measure of intention towards professional skepticism on a scale from 1 (strongly disagree) to 7 (strongly agree) based on responses to four underlying items.
SKEPTICAL ACTIONS	
SKEPTICAL_ACTIONS (Engagement-level)	Measures of skeptical actions on a scale from 1 to 7 based on responses to eight underlying items.

Firm-level indicates that a variable is not engagement-specific but related to a characteristic of the audit firm that is invariant across engagements. Engagement-level indicates that a variable was part of the experiential questionnaire and relates to characteristics that are engagement-specific. All other variables are individual-level variables.

APPENDIX B
Measurement Scales

Panel A: Situational Characteristics

ETHICAL_CULTURE (Cronbach's alpha = 0.69)
We measured the relative extent of audit firm ethical culture based on Sweeney et al. (2010), whereby the measure consists of four items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). We use the reversed score to measure ethical culture. Higher scores indicate a more ethical perceived culture.

To what extent do you agree with the following statements?

1. In my firm, I sometimes perceive that senior managers engage in behaviors that I consider to be unethical. (r) Mean = 5.45 (raw score = 2.55); Factor loading = 0.85	3. In my firm, top management has let it be known in no uncertain terms that unethical behaviors will not be tolerated. Mean = 5.47; Factor loading = 0.56
2. In my firm, I sometimes perceive that partners engage in behaviors that I consider to be unethical. (r) Mean = 5.36 (raw score = 2.64); Factor loading = 0.85	4. My firm is known as a leader in promoting professional ethics within the profession. Mean = 5.08; Factor loading = 0.59

AQT_BEHAVIORS (Cronbach's alpha = 0.84)
We measured the relative extent of audit quality threatening behaviors based on Otley and Pierce (1996), whereby the measure consists of five items scored on a 7-point Likert scale (varying from almost never to almost always). Higher scores indicate a greater extent of audit quality threatening behaviors at the audit firm.

Listed below are pressures some people in other organizations claim to have experienced in their jobs. To what extent do you believe these behaviors occur in your firm?

1. Acceptance of weak client explanations. Mean = 3.33; Factor loading = 0.83	4. Reduction of work below what would normally be considered reasonable. Mean = 2.81; Factor loading = 0.81
2. Superficial review of client documents. Mean = 3.66; Factor loading =0.68	5. Prematurely signing off an audit step (signing off an audit-program step without completing the work or noting the omission. Mean = 2.68; Factor loading =0.75
3. Failure to research an accounting principle. Mean = 2.91; Factor loading =0.85	

FIRM_ORIENTATION (Cronbach's alpha = 0.89)
We measured the relative extent of audit firm professional orientation based on Wittek et al. (2008), whereby the measure consists of five items scored on a 7-point Likert scale (varying from not important at all to extremely important). Higher scores indicate that the audit firm has a more positive professional orientation.

To what extent do you believe the following elements to be important in your accounting firm?

1. Being considered as independent. Mean = 5.96; Factor loading = 0.78 2. Being considered as having professional expertise. Mean = 6.07; Factor loading = 0.84 3. Following professional codes of behavior. Mean = 6.06; Factor loading = 0.87	4. Providing accurate and trustworthy information to clients. Mean = 6.08; ; Factor loading = 0.88 5. Behaving in line with the public interest. Mean = 5.93; Factor loading = 0.82

QUALITY_CONTROL (Cronbach's alpha = 0.71)
We measured the relative strength of audit firm quality control based on Malone and Roberts (1996), whereby the measure consists of five items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). Higher scores indicate a stronger quality control orientation at the firm.

To what extent do you agree with the following statements?

1. In our firm, if an auditor falsely signs off an audit step his/her action will likely be discovered. Mean = 4.85; Factor loading = 0.68 2. The review process in our firm is unlikely to discover instances where an auditor made tick-marks on an audit schedule after an essentially superficial review of supporting client documents. (r) Mean = 4.62 (raw score = 3.38) ; Factor loading = 0.58	3. An auditor's failure to research a technical accounting or auditing issue, when unsure of the answer, is not likely to be discovered by our firm's review process or quality control system. (r) Mean = 5.00 (raw score = 2.99) ; Factor loading = 0.72 4. If an auditor accepts a weak explanation from a client, the review process will probably discover this and require additional work. Mean = 5.23; Factor loading = 0.71 5. Our firm has an effective quality control system. Mean = 5.47; Factor loading = 0.76

APPRAISAL_PS (Cronbach's alpha = 0.85)
We measured the relative extent of support for professional skepticism by the audit firm's performance appraisal system based Cohen et al. (2017), whereby the measure consists of four items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). Higher scores indicate a performance appraisal system that values the application of professional skepticism.

To what extent do you agree with the following statements?

1. The performance evaluation processes at my firm do not reward professional skepticism. (r) Mean = 4.56 (raw score = 3.44) ; Factor loading = 0.71 2. The performance evaluation system at my firm places more emphasis on retaining/acquiring audit clients than maintaining an appropriate level of professional skepticism. (r) Mean = 4.88 (raw score = 3.12) ; Factor loading = 0.90	3. Promotion policies at my firm favor revenue generation over technical skills and the application of professional skepticism. (r) Mean = 4.86 (raw score = 3.14) ; Factor loading = 0.87 4. Promotion policies at my firm favor avoiding conflict with the client over the application of professional skepticism. (r) Mean = 5.07 (raw score = 2.93) ; Factor loading = 0.86

ACCOUNTABILITY (Cronbach's alpha = 0.90)

We measured the relative extent of auditors' feelings of accountability based on Downey et al. (2020), whereby the measure consists of six items scored on a 7-point Likert scale (varying from not at all to extremely). Higher scores indicate stronger feelings of accountability.

How accountable did you feel while working on this engagement...

1. with respect to this particular engagement team? Mean = 5.61; Factor loading = 0.79. 2. with respect to your home office of your audit firm? Mean = 5.44; Factor loading = 0.88. 3. with respect to the overall audit firm? Mean = 5.25; Factor loading = 0.86	4. with respect to the client? Mean = 5.26; Factor loading = 0.78. 5. with respect to regulatory oversight bodies (e.g., AFM, PCAOB)? Mean = 4.99; Factor loading = 0.83. 6. with respect to the users of financial statements? Mean = 5.34; Factor loading = 0.83.

Panel B: Client Characteristics

CLIENT_IMPORTANCE

We measured *CLIENT_IMPORTANCE* using a single item question, "Please estimate the importance of this client to your firm" on a scale from 1 = not at all important to 7 = extremely important.

CLIENT_IDENTIFICATION (Cronbach's alpha = 0.87)

We measured client commitment and identification based on four items from Bamber and Iyer (2007) and five items from Herda and Lavelle (2013), scored on a 5-point Likert scale (varying from strongly disagree to strongly agree). Higher scores indicate stronger identification with and commitment to the client.

1. When someone criticizes this client, it feels like a personal insult. Mean = 2.06; Factor loading = 0.73 2. When I talk about this client, I usually say "we" rather than "they". Mean = 1.79; Factor loading = 0.70 3. This client's successes are my successes. Mean = 1.84; Factor loading = 0.78 4. When someone praises this client, it feels like a personal compliment. Mean = 2.01; Factor loading = 0.77	5. I really feel as if this client's problems are my own. Mean = 1.85; Factor loading = 0.70 6. I feel "emotionally attached" to this client. Mean = 1.89; Factor loading = 0.79 7. I feel a strong sense of "belonging" to this client. Mean = 1.76; Factor loading = 0.84 8. I feel like "part of the family" at this client. Mean = 1.67; Factor loading = 0.77 9. If it were up to me, I'd like to continue serving this client (as long as I am with my firm). Mean = 2.91; Factor loading = 0.36

BUDGET_PRESSURE (Cronbach's alpha = 0.64)

We measured budget pressure based on Malone and Roberts (1996), whereby the measure consists of three items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). Higher scores indicate stronger feelings of budget pressure.

1. Did you feel time budget pressure from the budget you were working on. Mean = 3.43; Factor loading = 0.81 2. Did you feel that the time budget was unattainable. Mean = 3.59; Factor loading = 0.89	3. I finished my work within the allotted time budget. (r) Mean = 4.18 (raw score = 3.82); Factor loading = 0.56

Panel C: Auditor Characteristics

Hurtt Professional Skepticism Scale (HPSS) (Cronbach's alpha = 0.84)

The Hurtt Professional Skepticism Scale (Hurtt 2010) consists of 30 items scored on a 6-point scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The items for which the scores should be reversed are indicated by (r). A higher total score indicates greater trait skepticism.

1. I often accept other peoples' explanations without further thought. (r) Mean = 4.75 (raw score = 2.26); Factor loading = 0.39	15. I think that learning is exciting. Mean = 4.92; Factor loading = 0.59
2. I feel good about myself. Mean = 4.70; Factor loading = 0.39	16. I usually accept things I see, read or hear at face value. (r) Mean = 4.27 (raw score = 2.74); Factor loading = 0.40
3. I wait to decide on issues until I can get more information. Mean = 4.65; Factor loading = 0.31	17. I don't feel sure of myself. (r) Mean = 4.67 (raw score = 2.33); Factor loading = 0.44
4. The prospect of learning excites me. Mean = 4.98; Factor loading = 0.58	18. I usually notice inconsistencies in explanations. Mean = 4.54; Factor loading = 0.34
5. I am interested in what causes people to behave the way that they do. Mean = 4.92; Factor loading = 0.53	19. Most often I agree with what the others in my group think. (r) Mean = 3.91 (raw score = 3.07); Factor loading = 0.34
6. I am confident of my abilities. Mean = 4.72; Factor loading = 0.49	20. I dislike having to make decisions quickly. Mean = 3.95; Factor loading = 0.13
7. I often reject statements unless I have proof that they are true. Mean = 4.13; Factor loading = 0.28	21. I have confidence in myself. Mean = 4.71; Factor loading = 0.42
8. Discovering new information is fun. Mean = 4.94; Factor loading = 0.58	22. I don't like to decide until I've looked at all of the readily available information. Mean = 4.49; Factor loading = 0.33
9. I take my time when making decisions. Mean = 4.72; Factor loading = 0.41	23. I like searching for knowledge. Mean = 4.80; Factor loading = 0.59
10. I tend to immediately accept what other people tell me. (r) Mean = 4.78 (raw score = 2.22); Factor loading = 0.47	24. I frequently question things that I see or hear. Mean = 4.64; Factor loading = 0.52
11. Other peoples' behavior doesn't interest me. (r) Mean = 4.79 (raw score = 2.21); Factor loading = 0.37	25. It is easy for other people to convince me. (r) Mean = 4.30 (raw score = 2.70); Factor loading = 0.35
12. I am self-assured. Mean = 4.41; Factor loading = 0.41	26. I seldom consider why people behave in a certain way. (r) Mean = 4.50 (raw score = 2.51); Factor loading = 0.44
13. My friends tell me that I usually question things that I see or hear. Mean = 4.14; Factor loading = 0.38	27. I like to ensure that I've considered most available information before making a decision. Mean = 4.63; Factor loading = 0.48
14. I like to understand the reason for other peoples' behavior. Mean = 4.80; Factor loading = 0.57	28. I enjoy trying to determine if what I read or hear is true. Mean = 4.62; Factor loading = 0.53
	29. I relish learning. Mean = 4.38; Factor loading = 0.45
	30. The actions people take and the reasons for those actions are fascinating. Mean = 4.58; Factor loading = 0.56

Rotter Interpersonal Trust (RIT) (Cronbach's alpha = 0.76)

Rotter's Interpersonal Trust scale consists of 25 items that are scored on a 5-point Likert Scale (varying from strongly disagree to strongly agree). We gathered scale items from Wrightsman (1991). The items of which the scores should be reversed are indicated by (r). Adding up the points for each item provides the interpersonal trust score. Higher scores indicate higher interpersonal trust. We use the reversed score on Rotter's Interpersonal Trust Scale to measure distrust; higher scores indicate greater distrust.

1. Hypocrisy is on the increase in our society. (r)	13. If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be. (r)
2. In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy. (r)	14. Most elected officials are really sincere in their campaign promises.
3. This country has a dark future unless we can attract better people into politics. (r)	15. Many major national sports contests are fixed in one way or another. (r)
4. Fear and social disgrace or punishment rather than conscience prevents most people from breaking the law. (r)	16. Most experts can be relied upon to tell the truth about the limits of their knowledge.
5. Using the honor system of not having a teacher present during exams would probably result in increased cheating. (r)	17. Most parents can be relied upon to carry out their threats or punishments.
6. Parents usually can be relied on to keep their promises.	18. Most people can be counted on to do what they say they will do.
7. The United Nations will never be an effective force in keeping world peace. (r)	19. In these competitive times one has to be alert or someone is likely to take advantage of you. (r)
8. The judiciary is a place where we can all get unbiased treatment.	20. Most idealists are sincere and usually practice what they preach.
9. Most people would be horrified if they knew how much news that the public hears and sees is distorted. (r)	21. Most salesmen are honest in describing their products.
10. It is safe to believe that in spite of what people say most people are primarily interested in their own welfare. (r)	22. Most students in school would not cheat even if they sure of getting away with it.
11. Even though we have reports in newspapers, radio, and TV, it is hard to get objective accounts of public events. (r)	23. Most repairmen will not overcharge even if they think you are ignorant of their specialty.
12. The future seems very promising.	24. A large share of accident claims filed against insurance companies are phony. (r)
	25. Most people answer public opinion polls honestly.

Professional Moral Courage (PMC) (Cronbach's alpha = 0.91)

The Professional Moral Courage scale (Serkerka et al., 2009) consists of 15 items scored on a 7-point scale, ranging from 1 (never true) to 7 (always true). Respondents are asked to evaluate these statements as they pertain to them at work. Adding up the points for each item and dividing the total by 15 provides the moral courage score. A higher total score indicates greater moral courage and willingness to take skeptical actions.

1. I am the type of person who is unfailing when it comes to doing the right thing at work. Mean = 4.87; Factor loading = 0.48	8. I hold my ground on moral matters, even if there are opposing social pressures. Mean = 5.37; Factor loading = 0.72

2. When I do my job I regularly take additional measures to ensure my actions reduce harms to others. Mean = 4.99; Factor loading = 0.56 3. My work associates would describe me as someone who is always working to achieve ethical performance, making every effort to be honorable in all my actions. Mean = 5.37; Factor loading = 0.72 4. I am the type of person who uses a guiding set of principles from the organization when I make ethical decisions on the job. Mean = 4.93; Factor loading = 0.56 5. No matter what, I consider how both my organization's values and my personal values apply to the situation before making decisions. Mean = 5.47; Factor loading = 0.67 6. When making decisions I often consider how my role in the organization, my command, and my upbringing must be applied to any final action. Mean = 5.22; Factor loading = 0.64 7. When I encounter an ethical challenge I take it on with moral action, regardless of how it may pose a negative impact on how others see me. Mean = 5.37; Factor loading = 0.72	9. I act morally even if it puts me in an uncomfortable position with my superiors. Mean = 5.36; Factor loading = 0.75 10. My coworkers would say that when I do my job I do more than follow the regulations, I do everything I can to ensure actions are morally sound. Mean = 5.11; Factor loading = 0.79 11. When I go about my daily tasks I make sure to comply with the rules, but also look to understand their intent, to ensure that this is being accomplished as well. Mean = 5.57; Factor loading = 0.72 12. It is important that we go beyond the legal requirements but seek to accomplish our tasks with ethical action as well. Mean = 5.41; Factor loading = 0.68 13. It is important for me to use prudential judgment in making decisions at work. Mean = 5.34; Factor loading = 0.70 14. I think about my motives when achieving the mission, to ensure they are based upon moral ends. Mean = 5.26; Factor loading = 0.77 15. I act morally because it is the right thing to do. Mean = 5.79; Factor loading = 0.69

PERSONALITY TRAITS:

The Ten-Item Personality Inventory (Gosling et al. 2003) consists of 10 items scored on a 7-point Likert Scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). Adding up the scores results in a score for ***EXTRAVERSION*** (1, 6), ***AGREEABLENESS*** (2, 7), ***CONSCIENTIOUSNESS*** (3, 8), ***EMOTIONAL_STABILITY*** (4, 9) and ***OPENNESS*** to experiences (5, 10).

Here are a number of personality traits that may or may not apply to you. Please indicate to what degree you agree with the following statements. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

1. Extraverted, enthusiastic. Mean = 5.03	6. Reserved, quiet. (r) Mean = 4.13 (raw score = 3.87)
2. Critical, quarrelsome. (r) Mean = 2.54 (raw score = 5.42)	7. Sympathetic, warm. Mean = 5.38
3. Dependable, self-disciplined. Mean = 5.70	8. Disorganized, careless. (r) Mean = 5.72 (raw score = 2.27)
4. Anxious, easily upset. (r) Mean = 5.10 (raw score = 2.87)	9. Calm, emotionally stable. Mean = 5.57
5. Open to new experiences, complex. Mean = 5.36	10. Conventional, uncreative. (r) Mean = 4.26 (raw score = 3.73)

The Short Dark Triad (Jones and Paulhus 2014) consists of 27 items scored on a 5-point Likert Scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). The sum of scores indicates ***MACHIAVELLIANISM*** (1-9), ***NARCISSISM*** (10-18) and ***PSYCHOPATHY*** (19-27). Please indicate to what degree you agree with the following statements.

MACHIAVELLIANISM *(Cronbach's alpha = 0.72)*	***NARCISSISM*** *(Cronbach's alpha = 0.59)*	***PSYCHOPATHY*** *(Cronbach's alpha = 0.70)*
1. It's not wise to tell your secret. Mean = 3.62; Factor loading = 0.34	10. People see me as a natural leader. Mean = 3.22; Factor loading = 0.44	19. I like to get revenge on authorities. Mean = 1.94; Factor loading = 0.71
2. I like to use clever manipulation to get my way. Mean = 2.27; Factor loading = 0.63	11. I hate being the center of attention. (r) Mean = 3.06 (raw score = 2.93); Factor loading = 0.44	20. I avoid dangerous situations. (r) Mean = 2.84 (raw score = 3.14); Factor loading = 0.29
3. Whatever it takes, you must get the important people on your side. Mean = 2.92; Factor loading = 0.57	12. Many group activities tend to be dull without me. Mean = 2.47; Factor loading = 0.58	21. Payback needs to be quick and nasty. Mean = 1.81; Factor loading = 0.72
4. Avoid direct conflict with others because they may be useful in the future. Mean = 2.57; Factor loading = 0.52	13. I know that I am special because everyone keeps telling me so. Mean = 2.33; Factor loading = 0.73	22. People often say I'm out of control. Mean = 1.58; Factor loading = 0.54
5. It's wise to keep track of information that you can use against people later. Mean = 2.24; Factor loading = 0.69	14. I like to get acquainted with important people. Mean = 2.90; Factor loading = 0.59	23. It's true that I can be mean to others. Mean = 2.47; Factor loading = 0.60
6. You should wait for the right time to get back at people. Mean = 2.61; Factor loading = 0.66	15. I feel embarrassed if someone compliments me. (r) Mean = 3.26 (raw score = 2.73); Factor loading = 0.19	24. People who mess with me always regret it. Mean = 2.33; Factor loading = 0.64
7. There are things you should hide from other people because they don't need to know. Mean = 3.28; Factor loading = 0.59	16. I have been compared to famous people. Mean = 2.03; Factor loading = 0.56	25. I have never gotten into trouble with the law. (r) Mean = 1.93 (raw score = 4.06) ; Factor loading = 0.29
8. Make sure your plans benefit you, not others. Mean = 2.45; Factor loading = 0.55	17. I am an average person. (r) Mean = 3.10 (raw score = 2.88); Factor loading = 0.43	26. I enjoy having sex with people I hardly know. Mean = 1.91; Factor loading = 0.56
9. Most people can be manipulated. Mean = 3.41; Factor loading = 0.39	18. I insist on getting the respect I deserve. Mean = 3.19; Factor loading = 0.31	27. I'll say anything to get what I want. Mean = 1.84; Factor loading = 0.71

MOTIVATION

We measured *MOTIVATION* using a single item question "How motivated were you to perform well on this audit engagement?" on a scale from 1 = not at all motivated to 7 = extremely motivated.

INDUSTRY_EXPERTISE

We measured self-assessed industry expertise using a single item question, , "To what extent do you consider yourself to be an "industry expert" in the industry of this client?" on a scale from 1 = not at all to 7 = extremely.

AUDIT KNOWLEDGE (Cronbach's alpha = 0.94)
We measured self-assessed audit knowledge with respect to valuation, fraud, and analytical procedures. We use 3 items scored on a 7-point Likert Scale (varying from not at all experienced to extremely experienced). Higher scores indicate greater knowledge along these dimensions.

Indicate the amount of experience you have with respect to the following issues:
1. Difficult accounting measurement and valuation problems. **(*KNOW_VALUATION*)** Mean = 4.6; Factor loading = 0.95
2. The assessment of risks of material misstatements due to fraud. (***KNOW_FRAUD*)** Mean = 4.7; Factor loading = 0.95
3. The application of analytical procedures during an audit. **(*KNOW_ANALYTICAL_PROC*)** Mean = 5.1; Factor loading = 0.93

Panel D. Cognitive Processing

ATTITUDE (Cronbach's alpha = 0.62)
To measure attitudes toward professional skepticism, we composed a question consisting of five items scored on a 7-point Scale. The items for which the scores should be reversed are indicated by (r). Higher scores indicate a more positive attitude towards professional skepticism.

I think maintaining professional skepticism throughout an audit engagement is:

1. good – bad. (r). Mean = 6.49; Factor loading = 0.79	4. difficult – easy. Mean = 4.11; Factor loading = 0.18
2. harmful – beneficial. Mean = 5.87; Factor loading = 0.62	5. unimportant – important. Mean = 6.49; Factor loading = 0.60
3. pleasant (for me) – unpleasant (for me). (r). Mean = 5.44; Factor loading = 0.48	

SUBJECTIVE_NORMS (Cronbach's alpha = 0.71)
We measured subjective norm based on the work of Ajzen (1991, 2006), including three items scored on a 7-point Likert Scale (varying from strongly disagree to strongly agree). Higher scores indicate greater perceived social pressure to engage in skeptical behavior.

To what extent do you agree with the following statements?

1. Most people who are important to me within my firm would encourage me to maintain professional skepticism throughout an audit. Mean = 5.79; Factor loading = 0.64. 2. Most people like me maintain professional skepticism throughout an audit. Mean = 5.71; Factor loading = 0.73.	3. It is expected of me that I maintain professional skepticism throughout an audit. Mean = 6.18; Factor loading = 0.67

PERCEIVED_BEHAVIORAL_CONTROL (PBC) (Cronbach's alpha = 0.34)
We measured perceived behavioral control based on the work of Ajzen (1991, 2006), including three items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). The items for which the scores should be reversed are indicated by (r). Higher scores indicate a greater sense of perceived behavioral control.

To what extent do you agree with the following statements?

1. Maintaining professional skepticism throughout an audit or not is entirely up to me. (r) Mean = 4.07; Factor loading = 0.25. 2. I am confident that I can maintain professional skepticism throughout an audit. Mean = 5.89; Factor loading = 0.15.	3. Maintaining professional skepticism throughout an audit is beyond my control. (r) Mean = 5.30; Factor loading = 0.94.

INTENTION (Cronbach's alpha = 0.67)
We measured intention based on the work of Ajzen (1991, 2006), but adapt the measures of this construct to an auditing context, including four items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). Higher scores indicate a greater intention of behaving skeptically.

To what extent do you agree with the following statements?

1. I intend to maintain professional skepticism throughout my next audits. Mean = 6.25; Factor loading = 0.75. 2. Professional skepticism is an important topic to me. Mean = 6.28; Factor loading = 0.78.	3. I am well enough informed to apply professional skepticism throughout an audit. Mean = 5.94; Factor loading = 0.75. 4. I often think about professional skepticism. Mean = 5.25; Factor loading = 0.60.

SKEPTICAL_ACTIONS **(Cronbach's alpha = 0.86)**
We measured skeptical actions based on the work of Ajzen (1991, 2006), but adapt the measures of this construct to an auditing context, including eight items scored on a 7-point Likert scale (varying from strongly disagree to strongly agree). Higher scores indicate greater levels of skeptical actions on the audit engagement.

To what extent do you agree with the following statements?

1. I challenged the reliability of information given by management. Mean = 5.83; Factor loading = 0.79.	5. I was alert to conditions that could indicate possible material misstatements. Mean = 5.89; Factor loading = 0.75.
2. I extensively searched for evidence in order to improve audit quality. Mean = 5.55; Factor loading = 0.75.	6. I was critical of audit evidence gathered by other members of the engagement team. Mean = 5.51; Factor loading = 0.76.
3. I was willing to challenge management assertions. Mean = 5.72; Factor loading = 0.81.	7. I challenged the judgments of other members of the engagement team. Mean = 5.45; Factor loading = 0.79.
4. I searched for evidence opposing management's point of view. Mean = 5.06; Factor loading = 0.68.	8. I searched for evidence supporting management's point of view. (r). Mean = 5.01; Factor loading = 0.45.