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FRAUD DETECTION: THE IMPACT OF CFE DESIGNATION ON PROFESSIONAL SKEPTICISM AND BRAINSTORMING

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Abstract

SAS No. 99. - Consideration of Fraud in a Financial Statement Audit, to supersede SAS No. 82 (AICPA 2002), requires auditors to conduct fraud brainstorming sessions on every audit. Brainstorming aims to improve auditors' professional skepticism and reduce their cognitive dissonance. So they can more effectively evaluate the potential of fraud when investigating financial statements. Despite SAS No 99., Auditors continue to fail at modifying their standard audit procedures in response to fraud risk. The Public Company Accounting Oversight Board (PCAOB) cited a lack of professional skepticism as the primary cause of inconsistent brainstorming sessions. Our experiment advances Carpenter's (2007) study by investigating whether the Certified Fraud Examiner's designation enhances fraud risk detection by improving professional skepticism and brainstorming quality in audit teams. The results should inform regulators, academic researchers, and audit practitioners. It can shift how accounting educators and industry professionals prepare auditors to effectively evaluate unstructured fraud cues to lessen the impact of fraud losses and save investors hundreds of millions of dollars in economic value.

Keywords

Fraud, Fraud Risk Detection, Brainstorming, Professional Skepticism

Introduction and Purpose Statement/Problem Definition

Fraud continues to emerge as one of the significant imperilments to the accounting profession. Growing annually at a rate of six to eight percent, it now represents 6.05% of the world's gross domestic product (GDP), according to a 2019 Financial Cost of Fraud report jointly published by U.K. accounting firm Crowe International and the University of Portsmouth (Barnes, 2019). Fraud has led to the erosion of stakeholders' confidence across the globe and financial statements, and the auditors who produce them, once held in high regard, are currently viewed with skepticism (Mangala & Kumari, 2017).

In the face of the rapidly growing COVID-19 pandemic, 44 million Americans have filed for unemployment benefits (U.S. Department of Labor, 2020). Trillions of dollars have been economically abandoned (Makridis & Hartley, 2020), and fraud rears its ugly head. According to a May 14, 2020, U.S. Secret Service bulletin (U.S. et al., 2020), unemployment-benefit fraud is spiraling nationwide. As states scramble to process unemployment checks to support their jobless citizens, a nefarious Nigerian fraud ring, dubbed "Scattered Canary," has siphoned off benefits of unemployed workers in at least seven states. The states include Washington, North Carolina, Massachusetts, Rhode Island, Oklahoma, Wyoming, and Florida (Fox Business, 2020; Seattle Times, 2020).

Using stolen personal information likely obtained in past consumer data breaches, the Scattered Canary filed thousands of bogus applications with state employment agencies. Currently beset by a tidal wave of legitimate claims, these agencies failed to detect fraudulent applications. According to Employment Security Department Commissioner Suzi LeVine, the criminal organization had siphoned hundreds of millions of dollars in benefits by the time the fraud was recognized (Seattle Times, 2020). Currently, the Department of Justice is investigating accusations in all seven states. Scattered Canary Gate is another example of an anti-fraud mechanism that must keep pace with fraudsters and fraudulent schemes.

Unlike COVID, where the pandemic curve is flattening, fraud is the virus that continues to spread. The accounting profession did respond to the challenge through the issuance of Statements on Auditing Standards (SAS), Number 99 – Consideration of Fraud in a Financial Statement Audit in 2002. The critical element of the standard was the introduction of Brainstorming as a requirement for auditors during an audit engagement. SAS No.

99 requires the audit team to discuss the potential for a material misstatement in the financial statements due to fraud before or during the information-gathering process (Carpenter, 2004). Brainstorming aims to improve auditors' professional skepticism to reduce their cognitive dissonance so they can more effectively evaluate the potential of fraud when investigating financial statement information.

Frauds are sometimes complicated and require auditors to think like fraudsters to incorporate a creative problem-solving approach to decipher fraud cases (Bolt-Lee et al.,2015; Barnes, 2019). The researcher believes the brainstorming quality can improve if the authors possess more excellent anti-fraud domain knowledge. Auditors with the Certified Fraud Examiner (CFE) designation should possess the most anti-fraud domain knowledge—trained in criminal law and investigation, deductive reasoning, unstructured problem-solving, fraud detection, and deterrence. CFEs are the auditors most capable of recognizing the warning signs and red flags that denote evidence of fraud and fraud risk (ACFE, 2020). Mangala and Kumari (2017) suggest that effective anti-fraud methods should be viewed as a necessary investment because of savings from losses due to fraud and damage to business stability, revenue, and image. Anti-fraud knowledge leads to higher-quality brainstorming sessions and, in turn, more exceptional fraud risk assessments and fraud risk responses.

This study aims to determine that auditors with Certified Fraud Examiner (CFE) credentials will detect more quality fraud issues by conducting higher-quality brainstorming sessions through an experiment first administered by Carpenter (2007). The research is of interest to regulators, academic researchers, and auditing practitioners because it examines the auditor's risk assessment of fraud, professional skepticism, and the efficacy of Brainstorming, now required by SAS No. 99 (Carpenter, 2004), adding the anti-fraud construct of CFE training and education. CFE training and education auditors for uncertainty and patterns of fraudulent behavior, which can increase fraud detection.

Research Question and Possible Contributions

The main research focus of this study can be summarized in the following question:

Do auditors who have attained their CFEs have a more significant impact on fraud detection? This fundamental question is further subdivided into specific research questions:

1. Do audit teams with at least one auditor with a Certified Fraud Examiner (CFE) designation have a higher professional skepticism than those without a CFE auditor?
2. Does more significant professional skepticism in auditors produce higher levels of Brainstorming during audit engagements in audit teams with at least one CFE auditor?
3. Will longer CFE brainstorming sessions result in higher levels of fraud detection?

My research has several contributions. First, this study extends the work of Carpenter (2007), who examined SAS No. 99 brainstorming among external auditors by examining whether the impact of Certified Fraud Examiner (CFE) designation can enhance their ability to detect fraud. Barnes (2019) proposed that the anti-fraud construct of CFE training and education would improve their cognitive skills. Auditors increase their critical thinking and unstructured problem-solving skills, thus boosting effectiveness and efficiency in evaluating financial items for material misstatement. However, most CFE experimental literature to date involves the testing of undergraduate participants. They have completed their educational requirements or have professional experience working in audit teams to detect fraud. For example, Brickner et al. (2010) examination of Internal Revenue Service (IRS) Criminal Investigation's Adrian Project found that students significantly improved their fraud-detection skills with proper training and development. This study adds to the auditing literature by operationalizing Barnes (2019) and Brickner et al. (2010) by improving that auditors who participate in the anti-fraud training and development of the CFE designation program can significantly improve their fraud-detection skills, which in turn, leads to better fraud detection.

Second, this study evaluates the impact of CFE designation of professional skepticism on auditors. Auditor skepticism is the foundation of investor confidence in financial reporting (source). SAS No. 99, Consideration of Fraud in a Financial Statement Audit, emphasizes the need for auditors to exercise professional skepticism when considering and responding to the risk of material misstatement due to fraud. The standard has provided guidance that suggests that auditors respond to increased fraud risk assessments with increased professional skepticism and additional audit procedures. However, the Public Oversight Board (POB) and the PCAOB have suggested that auditors need more professional skepticism, resulting in significant deficiencies in important audit areas (POB, 2000; PCAOB 2007a, 2008, 2010a). Our study contributes to the accounting and auditing literature by examining the interactive effects of CFE designation on professional skepticism and the level of fraud indicators on auditors' multi-faceted fraud assessments. Judgments include identifying fraud risk factors, risk assessments, and choice of audit procedures.

Third, this study analyzes the impact of auditors' professional skepticism on Brainstorming during audit engagements. Statement on Auditing Standards (SAS) No. 99, Consideration of Fraud in a Financial Statement

Audit, contends that a brainstorming session must be performed on every engagement. Standard setters suggest that Brainstorming will help auditors better detect fraud. Further studies have suggested a positive correlation between professional skepticism and auditor brainstorming. Brazel et al. (2010) suggest that auditors with higher professional skepticism tend to have more top-quality brainstorming sessions. With this in mind, the Public Company Accounting Oversight Board (PCAOB) AS 2401 - Consideration of Fraud in a Financial Statement Audit. PCAOB AS 2401 demands the auditor's exercise of professional skepticism throughout the import audit and stipulates that audit teams must perform a fraud brainstorming session to aid auditors in developing an awareness of possible fraud risk areas to improve effectiveness and efficiency (AS 2401.13). The study attempts to demonstrate the impact of individual professional skepticism in group brainstorming settings by investigating whether auditors and their teams with the CFE credential show higher (more in-depth) brainstorming sessions as measured by time spent Brainstorming.

Fourth, the researcher provides tests of components of Nelson's (2009) recently proposed comprehensive professional skepticism model. Nelson (2009) presented a model that describes how evidential input (i.e., audit evidence) combines with auditor incentives, trait skepticism (measured by Hurtt's (2010) scale), knowledge and audit experience, and training that compasses their ability to project professional skepticism. My study extends the literature by testing the links of the model and substituting CFE designation and training in the knowledge link. In doing so, the research extends the model by examining the interactive effects of these components of professional skepticism.

Overall, our results contribute to the accounting and auditing literature by triangulating the impact of CFE designation on Nelson's (2009) model on professional skepticism, multi-level audit brainstorming teams, and fraud detection in an experimental environment.

The remainder of this paper is organized as follows: Section II provides a literature review and background information on Certified Fraud Examiners. Section III provides the conceptual model and hypothesis development. Section IV outlines the experiment and methodology. Section V contains the results, and Section VI summarizes the research and conclusions.

Literature Review

This literature review consists of three parts:

- Define Brainstorming.
- Measure its brainstorming impact on fraud detection.
- Illustrate how a CFE designation can boost an auditor's brainstorming ability, thereby better-detecting fraud.

The construct has had a rich history in accounting literature since its inclusion in SAS No. 99 in 2002. As a mandatory requirement for auditors engaging in financial statement audits, this section provides a history of the construct and examines its evolution within the accounting domain. Second, professional skepticism, or P.S., is a review as an essential component of brainstorming and fraud assessment. This review outlines how P.S. helps auditors detect fraud by reducing cognitive dissonance.

Brainstorming

Brainstorming involves gathering ideas from group members who advocate as many original thoughts and unique solutions as possible (Blanchard, 2016). Brainstorming was first introduced in the accounting domain when AICPA issued Statement on Auditing Standards (SAS) No. 82, Consideration of Fraud in a Financial Statement Audit. This standard only recommends that auditors use Brainstorming as a planning mechanism in financial statement audits. However, the turn century's accounting scandals shake investors' confidence in the accuracy of financial statements, forcing regulators to produce more robust accounting fraud standards. Subsequently, the AICPA issued SAS No. 99, Consideration of Fraud in a Financial Statement Audit, to supersede SAS No. 82 (AICPA 2002).

SAS 99 made brainstorming mandatory for auditors engaging in audits as part of the planning stage. The standard's goal was to use Brainstorming to aid auditors in exchanging ideas about where an entity's financial statements may be susceptible to fraud. As a result, they will improve their professional skepticism as they gather and evaluate information on financial statements (Carpenter, 2004). However, the standard needs more guidance concerning conducting a proper brainstorming session. As a result, the PCAOB inspectors have noted several instances where auditors must adequately comply with SAS 99.

Carpenter (2007) first considered how fraud risk brainstorming might impact the evaluation of the likelihood of fraud. She used open (unstructured) and nominal (structured) techniques to assess three auditors' hierarchical teams for a simulated audit with fraud and no-fraud cases. In her experiment, she found evidence that while the quantity of fraud hypotheses created during fraud risk brainstorming is reduced, the hypotheses generated are of higher quality. Hoffman and Zimbelman (2009) extend Carpenter's added addressing the cognitive process

(called strategic reasoning) of group brainstorming to properly analyze evidence in detecting fraud. The researchers found that Brainstorming can considerably adjust the nature, extent, and timing of standard audit procedures in high fraud-risk situations. Next, Lynch et al. (2009) conclude that electronic Brainstorming (using computer software to generate fraud ideas) provided better performance than face-to-face Brainstorming.

Brazel et al. (2010) propose a model of fraud brainstorming quality that empirically improves the relationship between fraud risk factors and risk assessments.

Brazel et al. model indicates that Brainstorming consists of three significant inputs:

1. The attendance and communication input focus on auditors cognitively engaged in the brainstorming session and asserts that quality is improved due to greater diversity of thought.
2. The structure and timing input address the significance of brainstorming in the planning process to maximize the number of fraud possibilities and minimize any time constraints.
3. Engagement team effort asserts that more significant team member preparation before and participation during the brainstorming session can significantly improve brainstorming quality.

The model demonstrates an improvement in brainstorming quality, which impacts identifying fraud risk factors and hypotheses. This causes the auditor to change audit testing to enhance fraud risk assessment (McAllister et al., 2015).

Professional Skepticism

Professional skepticism (hereafter, P.S.) refers to "an attitude that includes a questioning mind and a critical assessment of audit evidence" (AS 1015). Nelson (2009; 1) defines P.S. as "indicated by auditor judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect, conditional on the information available to the auditor." P.S. is one cornerstone of the auditing profession because SAS No. 99 states that an auditor must exercise professional skepticism when considering the risk of material misstatement due to fraud (Nelson, 2009). The topic of P.S. concerns regulators because auditors need to consistently and diligently apply the construct. Poor P.S. has been cited as a major cause of inconsistent brainstorming quality.

P.S. can be split into two distinct groups: skeptical judgments and actions (Nelson, 2009; Hurtt, 2010; Hurtt et al., 2013). Cynical decisions refer to the auditor's ability to recognize a potential problem, whereas auditors take skeptical actions once a problem has been identified. Nelson (2009) asserts that dubious judgments and actions are affected by several factors, including the auditor's incentives, traits, knowledge, audit experience, training, and the engagement's evidential input. Hurtt et al. (2013) expand upon this model by categorizing these inputs into four categories: auditor characteristics, evidential characteristics, client characteristics, and external environmental characteristics.

In this study, the researchers will investigate the interaction between an auditor's professional skepticism and the experimental attributes of group fraud brainstorming. Studies indicated that regulators and academic researchers had suggested a positive relationship between professional skepticism and fraud detection. Hurtt's 30-item P.S. scale can measure professional skepticism, and Brainstorming will be measured by brainstorming time.

Certified Fraud Examiner Designation

Fraud is costly. According to the Association of Certified Fraud Examinations (ACFE), fraud losses represent approximately 7% of the U.S. Gross Domestic Product (ACFE, 2008; ACFE, 2009). These losses have translated into trillions of dollars of economic value to investors. Investors burnt by fraud have forced the accounting profession into greater accountability (Barnes,2019). The accounting profession has responded by issuing additional auditing standards to restore public trust with Statements on Auditing Standards (SAS), Number 99 – Consideration of Fraud in a Financial Statement Audit in 2002, becoming the benchmark for fraud detection. In addition to SAS No. 99, the American Institute of Certified Public Accountants (AICPA) released a series of audit risk standards (SAS Nos. 104 – 111) to help guide auditors with the risk assessment process. Similarly, the PCAOB in August 2010 adopted eight auditing standards (AS Nos. 8 – 15) to enhance the effectiveness of auditors' risk assessments (Chui & Pike, 2013).

However, time and again, auditors appear to fail in fraud detection as the response to additional standards is primarily symbolic. According to Martin Baumann, former chief auditor of the PCAOB, audit failure rates among inspected audits are "in a range of around 35 to 40%" (Chasan, 2014; Pike & Smith, 2015). Most fraud cases were detected by tips rather than external audits (Pike & Smith, 2014). The question remains, "Why are auditors still failing to detect fraud when the accounting profession is putting enormous financial and intellectual resources into solving the problem?

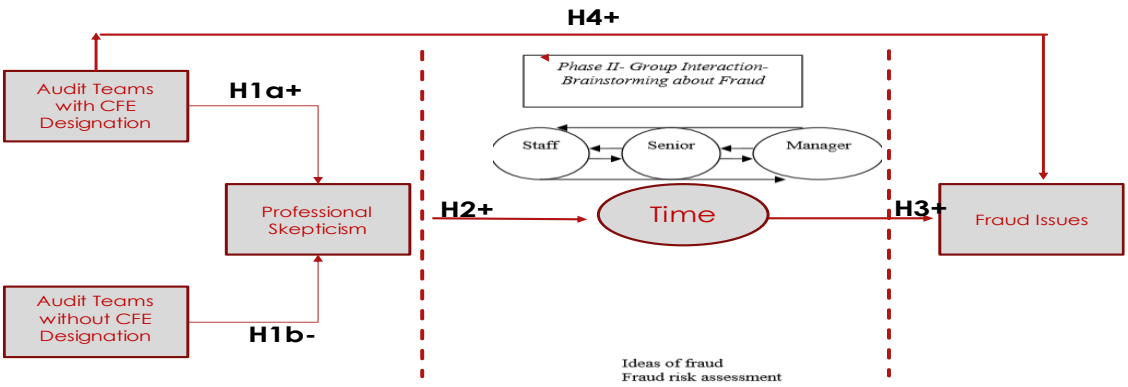
The problem lies in how auditors are being taught to detect fraud. Auditors who perform compliance examinations concerning the accuracy of financial statements are ill-prepared for the potential of fraud, which is required of them within SAS No. 99. Fraud detection, unlike a financial statement audit, requires a unique skill set and forensic techniques developed for the sole purpose of detecting the evidence of fraud (Davia, 2000). Joseph T.

Wells, the founder of the Association of Certified Fraud Examiners (ACFE), criticized auditors for their lack of training and readiness in fraud detection. He contends that "[a]s a group, CPAs are neither stupid nor crooked. Nevertheless, most are still ignorant about fraud; for the last 80 years, untrained accounting graduates have been drafted to wage war against sophisticated liars and thieves" (Wells, 2005b). Therefore, researchers have begun investigating how a Certified Fraud Examiner preparation can augment an auditor's cognitive skill set to improve their fraud detection abilities. Previous research provides evidence of improving student abilities to determine fraud risk factors (Carpenter et al., 2011; Lee et al., 2015).

Research on CFEs is scarce. There has been no direct empirical evidence that confirms improvement in audit detection of fraud upon obtainment of the CFE credential. Jallah (2020) partially proves that enhanced professional certification had no moderating effect on the relationship between professional skepticism and fraud risk assessment. Enget (2015) uses Tobit and ordered logit regression models on a sample of 40 auditors and 10 forensic professionals to moderately prove how an individual's level of fraud detection proficiency impacts their performance on fraud risk assessments and modification of audit plans. Enget includes merging the CFE designation with others such as Certified in Financial Forensics (CFF), Investigative Forensic Accountant (IFA), and Certified Forensic Accountant (Cr. FA) along with other CPE and fraud task-specific experience. Meservy et al. (2006) document a survey of 725 CFEs, outlining the skills and knowledge the training provides and the potential career paths the designation offers. Pike and Smith (2014) provide evidence that CFEs scored, on average, at least as high as professional auditors on the Hurtt skepticism scale.

This study proposes the following theoretical model and hypotheses.

Conceptual Model and Hypothesis Development



Certified Fraud Examiner (CFE) Designation

Fraudulent financial reporting and asset misappropriation have become significant problems for our global businesses. Research concludes that approximately six percent of a company's annual revenue is lost to employee fraud and abuse (Barnes, 2019). These losses have translated into trillions of dollars of economic value to investors. Investors burned by fraud have forced the accounting profession into greater accountability (Barnes,2019).

The accounting profession responded to stakeholders by issuing Statements on Auditing Standards (SAS), Number 99 – Consideration of Fraud in a Financial Statement Audit in 2002. SAS 99 was a significant step in fraud detection for auditors. They forced them to discuss all possibilities of fraud within an organization and develop appropriate audit tests to uncover schemes and misappropriations (Barnes, 2019). According to Asare et al. (2015, 68), the auditor's goals pertinent to the pertaining of fraud in a financial statement audit are:

I. Identify and assess fraud risk;
II. Obtain enough appropriate evidence regarding the assessed fraud risk by designing and implementing appropriate responses and
III. Respond appropriately to fraud or suspected fraud identified during the audit.

However, the Public Company Accounting Oversight Board (PCAOB) has reported that auditors experience difficulty with high fraud risk (PCAOB, 2002). Furthermore, research has determined that auditors lack the skills and training to detect financial fraud (source). Hammersley et al. (2011) confirm the use of forensic specialists needed in audits because Audit Seniors could not assess fraud risk. Additionally, auditors lack the skills, training, and incentives to trust their clients, inhibiting them from developing the Professional Skepticism trait.

Nelson (2009; 1) defines professional skepticism or P.S. as "indicated by auditor judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect, conditional on the information

available to the auditor." Professional skepticism forces auditors to brainstorm and continuously discuss potential fraud issues: The following questions are addressed by auditors during Brainstorming.

- What areas of the financial statements are susceptible to fraud?
- How could management perpetuate and conceal the fraud?
- How entity assets could be misappropriated (Asare et al., 2015)?

The question remains: "How do we train auditors to have higher professional skepticism? One proven way is to advance the knowledge of forensics into a traditional accounting curriculum education. Barnes (2019) cites that students engaged in forensic programs tend to foster investigation and creative problem-solving skills, allowing them to be more skeptical. Carpenter et al. (2011) provided empirical evidence that students who completed a forensic accounting course possess more professional skepticism than students without such training and that this effect persists over time. Although a proficient forensic accounting curriculum has been proven to boost auditor professional skepticism, approximately 3% of the accounting program contained forensics, providing minimal impact for the accounting professional (Barnes, 2019).

The second and probably the most effective alternative for auditors to enhance their professional skepticism is to obtain the Certified Fraud Examiner (CFE) designation. Awarded by the Association of Certified Fraud Examiners (ACFE), this group is the world's largest anti-fraud organization. The Wall Street Journal has characterized the ACFE as "the premier financial sleuthing organization. (Lendez, 2001). The organization is the premier provider of anti-fraud training and education. A CFE is equivalent to an economic detective possessing keen skills in critical thinking, unstructured problem-solving, investigative flexibility, analytical proficiency, oral and written communication, and deductive analysis (DiGabriele, 2008). These skills are positively related to the traits of professional skepticism. Hurtt (2010) distinguishes six features that encompass professional skepticism: a questioning mind, a suspension of judgment, a search for knowledge, interpersonal understanding, self-esteem, and autonomy.

The first three characteristics of professional skepticism (a questioning mind, suspension of judgment, and search for knowledge) indicate a disposition to search for and thoroughly investigate enough evidence before deciding on an outcome (Hurtt, 2010). Similarly, CFEs are trained in gathering and evaluating documentary evidence (Lendez, 2001) before making an assertion that mirrors the last two traits (self-esteem and autonomy) of professional skepticism, which focuses on the auditors' capacity to act on the evidence attained.

The evidence presented above asserts that an auditor's attainment of a Certified Fraud Examiner designation will improve professional skepticism. The skill sets obtained in CFE training and development will heighten skepticism; they develop deeper critical thinking and investigative skills to solve unstructured fraud cues. Based on theory from cognitive psychology, it is expected that increased professional skepticism would improve auditors' hypothesis testing performance in an evidence selection task where the auditor evaluates management's assertions (Petycheva, 2014; Nelson, 2009; Dawson et al., 2002; Griggs and Cox, 1982, 1983). Both regulators and academic researchers have indicated that professional skepticism is the key to better fraud detection (Hurtt, 2010).

This study examines the relationship between an auditor's attainment of a Certified Fraud Examiner (CFE) designation and professional skepticism, affecting their ability to correctly test the truthfulness of management's assertions regarding fraud. To date, the researcher must be aware of prior research examining the relationship between CFE attainment and professional skepticism. Therefore, the following hypotheses are proposed:

H1a: Audit Teams with a Certified Fraud Examiner (CFE) designation will have a higher professional skepticism than non-CFE audit teams.
H1b: Audit Teams without a Certified Fraud Examiner (CFE) designation will have less professional skepticism than non-CFE audit teams.

Professional skepticism modifies Brainstorming

Accounting professionals face scrutiny for their inability to detect fraud. They continue to search for underlying causes to flatten the curve of this economic pandemic. The American Institute of Certified Public Accountants (AICPA) attempted to correct the problem by issuing Statements on Auditing Standards (SAS), Number 99 – Consideration of Fraud in a Financial Statement Audit in 2002. The purpose of SAS No. 99 is to encourage auditors to use Brainstorming to discover all possibilities of fraud within their client organizations and design tests to uncover schemes and misappropriations (Barnes, 2019).

SAS No. 99 recognizes clients' motives to deceive auditors about misrepresentation or miscommunication (A.U. 316.87.A2–A3) of financial statement information (Hurtt, 2010). As a result, the AICPA is explicit when defining the auditor's role while conducting financial statement audits. SAS No. 99 indicates that due to the characteristics of fraud, the auditor must exercise professional skepticism when considering the risk of material misstatement due to fraud (Nelson, 2009).

Professional skepticism (P.S.) is at the foundation of the auditing profession (Hurtt, 2010). AICPA's inaugural statement, SAS No. 1, mandates an auditor's use of professional skepticism, stating, "Due professional care requires the auditor to exercise professional skepticism" (Hurtt, 2010, p. 38). Subsequently, AICPA follows up with SAS No. 67 - Guidance on Confirmations, to promote an appropriate level of professional skepticism during the confirmation process. SAS No. 109 - Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement focuses on auditors exhibiting an "attitude of professional skepticism" when planning and performing audits (Nelson, 2009).

P.S. is considered essential in auditing because it helps auditors evaluate audit evidence skeptically (Peytcheva, 2014). Studies have determined that auditors with higher P.S. perform more audit work and produce superior information searches to evaluate a higher likelihood of fraud (Fullerton & Durtschi, 2004; Quadackers et al., 2009; Popova, 2012). Conversely, regulators identify the lack of P.S. as the leading cause of the Security and Exchange (SEC) infractions (Beasley et al., 2001) and malpractice suits against auditors (Anderson & Wolfe, 2002). Former SEC Chief Accountant George Diacont acknowledged deficiencies in professional skepticism as the principal cause of audit failures (Nelson, 2009).

What role does Professional Skepticism play in enhancing Brainstorming during financial statement audits? Nelson (2009) defines professional skepticism as judgments and decisions made by an auditor indicating a heightened estimation of the risk that their client's assertion of the fairness of their financial statements may be incorrect based on the information available to the auditor." The Public Company Accounting Oversight Board (PCAOB) defines professional skepticism as an attitude that includes a questioning mind and a critical assessment of audit evidence. The auditor assumes neutrality of thought, meaning they do not have any preconceived bias, nor is management dishonest or honest. PCAOB believes P.S. is vital to the performance of effective audits under its Board standards (PCAOB, 2012).

Empirical research has indicated two distinct views of professional skepticism in the existing literature: the presumptive doubt view and the neutral view. The likely presumptive doubt view highlighted in Nelson's (2009;4) model of professional skepticism defines skepticism as a "heightened assessment of the risk that an assertion is incorrect, conditional on the information available to the auditor." Under this view, the auditor desires additional credible verification to conclude that management's assertion is correct relative to the norm (Peytcheva, 2014). On the other hand, the neutral view of professional skepticism cited by Hurtt (2010) is defined as "an attitude that includes a questioning mind and a critical assessment of audit evidence" (Nelson, 2009, p. 1). Under this position, P.S. is seen through the lens where auditors evaluate all evidence and risk throughout the audit process using neutrality of bias, thereby ensuring effectiveness in detecting fraud (Baumann, 2012). Hurtt's P.S. view has auditors suspending judgment on audits until considerable proof is obtained to conclude. She describes professional skepticism as "an individual multidimensional characteristic that can be categorized as both a trait and a state" (Hurtt, 2010, p. 2).

Hurtt uses this multidimensional construct to delineate professional skepticism into six character traits. The first three character traits, a questioning mind and suspension of judgment search for knowledge, explain an auditor's process of examining enough evidence before making a positive or negative assertion concerning financial statement data. The fourth character trait encompasses aspects of the fraud triangle relating to the underlying motivations for committing fraud. The final two character traits are self-esteem, autonomy, and recognizing auditors' actions once information is obtained and the problem has been identified (Hurtt, 2013). Hurtt designed a 30-item psychological scale to measure professional skepticism traits in auditors. Upon conducting a working paper review task experiment, she confirmed that auditors who generate higher scores on the P.S. scale demonstrate more suspicious behaviors, higher risk assessments, and more significant alternative explanations on the working papers (Hurtt et al.,2008). Moreover, Popova (2012) proved that auditors with higher Hurtt scores were more diagnostic in their fraud evidence hypothesis generation process. Therefore, auditors with higher levels of P.S. intend to develop more skeptical judgments, and their brainstorming inputs are described to be more extreme (McAllister et al., 2015).

The Hurtt score is relatively stable over time. Hammersley (2011) proposes that stable personality traits can be critical predictors of performance in fraud-related tasks, such as influencing client negotiations, audit planning, or even fraud brainstorming (Peytcheva, 2014). Brazel et al. (2010) suggest that auditors with higher professional skepticism tend to have more top-quality brainstorming sessions. Research demonstrates that higher-quality brainstorming sessions help auditors generate additional fraud hypotheses, facilitating fraud risk assessments (Carpenter & Reimers, 2013). Studies indicated that regulators and academic researchers had suggested a positive relationship between professional skepticism and fraud detection. With this in mind, the Public Company Accounting Oversight Board (PCAOB) issued PCAOB AS 2110 - Identifying and Assessing Risks of Material Misstatement. PCAOB AS 2110 guides auditors in planning the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement due to fraud (PCAOB, 2010). The legislation identifies two key elements: the exercise of professional skepticism and the requirement of fraud brainstorming sessions (McAllister et al., 2015).

PCAOB AS 2110 explicitly states that brainstorming discussions should occur with professional skepticism, whereby team members "set aside any prior beliefs they might have that management is honest and has integrity" (AS 2110.52). Evidence shows that professional skepticism allows auditors to identify more fraud cues, expand budgeted audit hours, identify more contradictions, generate alternative explanations, and negotiate more forcefully with clients (McAllister et al., 2015). Psychology research suggests that skepticism reduces confirmation biases. Therefore, auditors who use professional skepticism in evaluating audit evidence are expected to demonstrate superior logical reasoning about evidence selection in hypothesis-testing tasks (Dawson et al., 2002; Gilovich, 1991; Stanovich, 2001; Doosje et al., 1995; Hammersley, 2011).

As regulators continue to get a handle on fraud deterrence concerning management's assertions, the PCAOB passed a new fraud standard, PCAOB AS 2401 - Consideration of Fraud in a Financial Statement Audit. PCAOB AS 2401 requires auditors to assess whether management has designed sufficient fraud programs and controls to adequately address material misstatement risks in their operations (AS 2401.04). Also, PCAOB AS 2401 demands the auditor's exercise of Professional Skepticism throughout the audit of import and stipulates that audit teams must perform a fraud brainstorming session to aid auditors in developing an awareness of possible fraud risk areas to improve effectiveness and efficiency (AS 2401.13). Hoffman and Zimbelman (2009) found that group fraud risk brainstorming can also lead to more considerable adjustments to standard audit procedures' nature, extent, and timing in high fraud-risk situations.

This study examines the relationship between Professional Skepticism and auditor brainstorming before engaging in financial statement audits. There has been limited research on Professional Skepticism (P.S.) interaction with Brainstorming (B.S.). Bellovary and Johnstone (2007) conducted a field survey of twenty-two auditors across all personnel levels to evaluate the preparation, logistics, and procedures of Brainstorming, according to SAS No. 99. Also, the study reported if audit firms encourage professional skepticism during Brainstorming. The researchers only provided the necessary information on the influence of professional skepticism on Brainstorming. Bowlin et al. (2015) focused more on the impact of auditor rotation on professional skepticism. The authors postulated that auditor rotation leads to higher-quality auditing by reducing dishonesty. Brainstorming was mentioned indirectly as a mediating variable. The only study the researcher is aware of directly analyzing P.S.'s effects on B.S. was the study by McAllister et al. (2015). The study attempts to demonstrate the impact of individual professional skepticism in group brainstorming settings with inconclusive results. Their experiment indicated no significant relationship between the number of members with high trait professional skepticism and the assessed risk of fraud when at least one member possesses a high level of trait professional skepticism. The researcher believes the study's inconclusive results occurred because the participants were graduated accounting students with limited experience instead of hierarchal professional audit teams with diverse backgrounds and expertise.

Adapting elements of McAllister's study and integrating that knowledge into Carpenter's 2007 construct, the researcher seeks to prove a positive correlation between auditors' Professional Skepticism and Brainstorming. The study accomplishes this by measuring Hurtt's P.S. scale and the positive impact of brainstorming through measurement in brainstorming time administered before the stimulated audit. With that in mind, the following hypothesis is proposed:

H2: Audit Teams with more professional skepticism will have more time to brainstorm.

Higher Quality Brainstorming Improves Fraud

Fraud detection has been among the highest priorities for regulators, standard setters, and accounting researchers over a couple of decades since the accounting scandals of Enron, World Com, and many other Fortune 500 companies at the turn of the century (Barnes, 2019). AICPA aggressively introduced Statement on Auditing Standards (SAS) No. 99 (AICPA 2002), Consideration of Fraud in a Financial Statement Audit, to help auditors combat misappropriations of financial statements. SAS 99 was an essential piece of legislation because it forced auditors to derive methodologies from identifying the potential impact of fraud during the planning stages of an audit. Arguably, the most crucial element of SAS 99 was brainstorming sessions as a mandatory requirement in future audits. Brainstorming involves gathering ideas from group members who advocate as many original thoughts and unique solutions as possible (Blanchard, 2016). In seminal psychology, Osborn (1957) suggested that interactive groups will experience an increase in productivity for idea generation tasks (Carpenter, 2007). Audit teams have cooperative outcome interdependence because their team interaction in a brainstorming session depends on cooperation rather than competition (Carpenter, 2010). The AICPA intended to brainstorm to improve the professional skepticism in auditors and enhance their cognitive ability, so they will not rationalize away or dismiss any information that causes a material misstatement due to fraud. The procedure was designed to guide them to consult with fellow team members, probe the issues, and obtain as much evidence as necessary to satisfy the client's assertion of the fairness of their financial statements (Carpenter, 2004).

In theory, Brainstorming is supposed to alleviate cognitive dissonance in auditors and positively moderate the relations between fraud risk factors and risk assessments. Enhancing fraud assessment through Brainstorming has been a challenge. The Public Company Accounting Oversight Board (PCAOB) reported that auditors remain short of effectively modifying their standard audit procedures in response to fraud risk (Hoffman & Zimbelman, 2009). Also, PCAOB expressed concerns about the actual conduct and quality of brainstorming sessions in practice (PCAOB 2007). Since PCAOB inspections are confidential, it is difficult to ascertain whether brainstorming quality issues are pervasive or the session quality experiences abnormal fluctuations. However, the quality of the brainstorming sessions is crucial because studies show that the higher quality leads to better fraud risk assessments and increases the extent of fraud-related audit procedures (Carpenter, 2010).

Why has Brainstorming fallen short in delivering better fraud risk assessments and fraud risk responses? Stasser (1999) proposes that judgments and decisions likely depend on the quality of a team's interaction, and effectiveness is higher for teams using group support systems (Lynch et al.,2009). Also, better Brainstorming occurs when the audit team has more excellent domain knowledge. Bedard and Chi (1993) mention that more excellent knowledge of accounting domains is needed to identify fraud. Payne & Ramsay (2008) concluded that more time spent examining evidence increases memory and pattern recognition, enabling an auditor to quickly detect errors and uncover fraud. Auditors with the Certified Fraud Examiner (CFE) designation should possess the most anti-fraud domain knowledge. CFEs are trained in criminal law and investigation, fraud prevention, detection, and deterrence. Additionally, they possess skills in critical thinking, unstructured problem-solving, investigative flexibility, analytical proficiency, oral and written communication, and deductive analysis (DiGabriele, 2008; Barnes, 2019). This knowledge and training make them the most capable auditors to recognize the warning signs and red flags that denote evidence of fraud and fraud risk (ACFE, 2020).

Accounting literature also suggests that the benefits derived from Brainstorming depend on the brainstorming method used (Carpenter, 2007; Hoffman & Zimbelman, 2009; Lynch et al., 2009; Hunton & Gold, 2010). For this study, the researcher will examine four types: open, nominal, round-robin, and electronic. In open Brainstorming, the audit team exchanges ideas relatively unstructured (Bellovary & Johnstone, 2007; Carpenter, 2007; Hunton & Gold, 2010; Chen et al., 2015). Most firms have adopted this method because it is easy to use, but psychologists questioned its effectiveness. In nominal group brainstorming, each member sits alone and generates as many ideas as possible. The composite list reflects the collective set of unique ideas generated by the nominal group (Hunton and Gold) 2010. For example, Carpenter (2007), for which this study is a model, used the nominal approach as she conducted individual Brainstorming before they combined into audit teams. Next, we examine the round-robin brainstorming technique. Round-robin is partly based on the "nominal group technique" (NGT), originated by Delbecq et al. (1975), and consists of multiple steps. In the first step, all audit members in the group are asked to engage in nominal Brainstorming. The next step requires the whole group to meet, and each auditor, in a round-robin fashion, is expected to verbalize their fraud risk ideas to the group while the remainder listens. Finally, all members are afforded a second opportunity to articulate additional fraud risks triggered in the first round. Finally, electronic Brainstorming allows individual group members to input ideas using computer software separately. The positives of this approach have been empirically proven to outperform face-to-face brainstorming groups, particularly idea generation tasks (Chen et al., 2015). The downside deals with costs and scheduling.

For this study, the researcher will use the round-robin brainstorming technique. Hunton and Gold (2010) prove that round-robin generates more quality fraud ideas than open and nominal methods. Although Chen et al. (2015) empirically demonstrated that electronic Brainstorming was vastly superior to nominal Brainstorming and anecdotally appeared to be superior to round-robin brainstorming, it is challenging to implement the software and train the participants in the study. Furthermore, scheduling the technique is time-consuming.

In summary, higher detection is expected to occur in financial statement audits when:

1) Higher quality brainstorming sessions using the round-robin technique are expected to improve fraud risk factors and related assessments and
2) By attaining the Certified Fraud Examiner (CFE) designation, auditors possess higher fraud domain knowledge.

With this in mind, we posited the following hypotheses:

H3: Audit Teams with a higher level of Brainstorming will detect greater fraud items.
H4: Audit Teams with a Certified Fraud Examiner (CFE) designation will detect higher fraud items.

Experiment and Methodology

This experiment aims to determine whether auditors' attainment of the Certified Fraud Examiner (CFE) credential helps them identify more fraud items because they develop more significant professional skepticism, which enhances their ability to brainstorm more effectively.

Previous fraud literature concludes that brainstorming audit teams generate higher-quality fraud ideas and are more effective at modifying standard audit procedures in response to fraud risk indicators (Carpenter, 2007; Brazel et al., 2010; Hoffman & Zimbelman, 2009). McAllister et al. (2015) cited that auditors with higher levels of Professional Skepticism can improve overall brainstorming quality by helping audit teams generate fraud risk assessments and distinguish fraud hypotheses. Concurrently, the researcher asserts that an auditor's attainment of a certified fraud examiner designation will improve their professional skepticism. Therefore, this experiment postulates that an auditor's achievement of a CFE will lead to higher-level professional skepticism. As a result, a deeper level of Brainstorming leads to more significant detection of fraud issues.

Numerous studies have examined the impact of auditor's judgments on fraud items. Payne and Ramsay (2005) experimented to determine whether auditors demonstrate sufficient professional skepticism when planning fraud risk assessments. Hammersley et al. (2011) use the experimental form to highlight how to audit seniors who do not detect fraud when subjected to fraud cues. McAllister et al. (2015) tested how high levels of professional skepticism increase audit team risk of fraud in multiple settings.

Carpenter (2007), based on which this experiment is based, performed a two-phase study to observe the effects of Brainstorming on fraud detection for three-person hierarchical audit teams. The researcher has added two additional elements. Professional skepticism is evaluated pre-brainstorming by administering Hurtt's (2010) professional skepticism trait scale, which has been empirically tested and confirmed to be statistically significant in multiple studies. The researcher adds the Certified Fraud Examiner credential knowledge to half of the participant group to determine differences in fraud detection performance. The other studies had no stimulant or change agent involving the contributors.

Setting

The participants in the experiment consist of 120 auditors from the Big 4, national and regional firms located in Wisconsin. The auditors are divided into two groups: audit teams with at least one member with their Certified Fraud Examiner (CFE) credential and those without the CFE credential (non-CFEs). Auditors are also stratified individually by the public accounting rank of staff auditors, senior auditors, and managers. The study's objective is to determine the impact of CFE designation on auditors' fraud detection. The researcher will accomplish this task by comparing the number of fraud issues detected in the case studies between the CFE and the non-CFE group for auditors.

Questionnaire to stratify research groups

The researcher will contact the Wisconsin Institute of Certified Public Accountants (WICPA), a professional association representing 8,000 certified public accountants (CPAs) in Wisconsin, to acquire potential participants in this experiment. The researcher will also contact the Association of Certified Fraud Examiners (ACFE). ACFE is the world's largest anti-fraud organization, with over 85,000 members worldwide. Only ACFE members located in Wisconsin will be contacted. After obtaining approval from WICPA and ACFE, questionnaires will be mailed to all eligible members.

The questionnaires request the following demographic information:

- Name of Employer
- Position (public accounting auditor, comptrollership, cash manager, banker) to determine if the accountant works as an auditor
- If employed as an auditor, the employee indicates rank (staff, senior, or manager)
- Years of experience (in months)
- If employed as an auditor, does the auditor possess a CFE (yes or no)

The purpose of the questionnaire is to exclude non-auditors from the researcher’s database. The response rate is estimated to be approximately 5-10%, and the sampling bias is due to the lack of randomness.

Research Design

The experiment included sixty auditors who had CFE credentials and sixty auditors who were non-CFEs. These 120 auditors were selected from the original WICPA questionnaire. The research design is structured to determine the impact of CFE knowledge on auditors' fraud detection. The sample size of 120 auditors is consistent with prior experimental research. The original Carpenter (2007) experiment had only had of 120 participants. Payne and Ramsay (2005), who investigated professional skepticism during the planning stages of fraud risk assessment, had 184 auditors participate. Enget (2015) used only 50 auditors and forensic professionals to moderately prove how an individual's level of fraud detection proficiency impacts their performance on fraud risk assessments and modification of audit plans. Smith et al. (2012) had 80 participants to examine the effects of electronic fraud.

The study can be accomplished through the following objectives:

1. Measure the professional skepticism of auditors in the CFE and non-CFE groups by participating in Hurtt)

2. professional skepticism trait scale (pre-brainstorming).
3. Measure the number of frauds detected in the case between the CFE and non-CFE groups of auditors.
4. Measure the impact of experience (auditors rank, years of experience) on fraud detection by calculating the difference between staff auditors, senior auditors, and managers.
5. Evaluate the interaction of CFE knowledge with professional skepticism. The study achieves this goal by regressing the CFE and professional skepticism variables and gauging their influence.
6. Evaluate the interaction that professional skepticism has on Brainstorming. The study achieves this goal by regressing the Brainstorming and professional skepticism variables and gauging their influence.
7. Measure the impact of Brainstorming on fraud detection.

Pre-Brainstorming

Before participating in the brainstorming session, all auditors must complete Hurtt's professional skepticism trait scale. The 30-item psychological size measures six characteristics (a questioning mind, a suspension of judgment, a search for knowledge, interpersonal understanding, self-esteem, and autonomy) to determine the skepticism held by an individual auditor. The following is a sample of the Hurtt scale:

SKEPTICISM SCALE AND INSTRUCTIONS FOR ADMINISTRATION

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

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

The asterisk means these questions were reverse coded.

Experiment

The research design employs two-by-two experiment designs based on Carpenter (2007). Like Carpenter, the first dependent variable was fraud in the financial statements (fraud or no fraud), which varied between participants. The independent variable, Certified Fraud Examiner (CFE) (CFE versus Non-CFE), was the within-participants variable. This within-participants variable is essential to measuring whether CFE improves auditors' ability to detect fraud.

There are similarities and differences from the Carpenter study. Both studies use historical financial statements of an honest company cited by the SEC in an Accounting and Auditing Enforcement Release (AAER) as committing financial statement fraud or reinstated after complying with the infractions. Second, the experiment employed the same two by two research designs. Third, the analysis duplicates the same participant group (staff auditor, senior auditor, and manager) as the Carpenter study. Fourth, both studies attempt to empirically prove that Brainstorming enhances the quality of fraud ideas, which improves fraud detection. The only difference is the addition of the CFE designation in one of the participant groups.

On the other hand, Carpenter uses an identical company for both fraud and no-fraud cases. To avoid biases, this study employs two unique but equal companies regarding the number of fraud items in the experimental fraud and no-fraud case studies. The research concludes that using the same company in both cases gave the auditor too much inherent knowledge when examining the second fraud case, potentially skewing the outcomes.

Case Materials and Procedures

Upon entering the designated area, the researcher will hand auditors case booklets, pencils, and composition tablets. Participants are instructed to read cases, list the types of possible frauds (if any), and describe how the disguise company might be susceptible to material misstatement due to fraud and how management could have concealed the crime. They were also informed not to communicate with other accountants during the examination, and those announcements concerning time would be broadcast at sixty, thirty, and fifteen minutes to complete. After completion, the individual composition tablets were collected, and the time spent was documented and classified into a database. After a scheduled break, auditors of different experience levels (staff auditors, senior auditors, and managers) put in audit teams of three individuals and asked to brainstorm fraud issues as a group using the round-robin brainstorming technique. Once the audit team jointly completes the task, brainstorming time is documented, and the team composition book with the number of fraud issues listed, the names of audit team participants, and their listed auditor levels are collected and classified into a database.

The pre-numbered cases (ex., fraud #6, non-fraud #32) would begin with a narrative description of two disguised companies covering their competition, management, markets, and products. A set of financial statements with related notes followed. The cases include common-size balance sheets, income statements, and selected financial ratios. The fraud case consists of five different fraudulent acts described by the Securities and Exchange Commission (SEC). According to Statement of Auditing standards, four of the five fraud types are designated as "typical frauds" with no—99 implementation guidance. The four fraud types include: "recognizing revenue in the irregular period; improper capitalization of costs; unreasonable changes to the estimates of fair value; and manipulating expenses and reserves. The other fraud was identified as the improper deferment of tax credits" (Carpenter, 2007, p. 1127).

Upon case completion, the participants will complete a questionnaire to confirm the experience of those who completed the study. The cases, composition books, and surveys will be collected, analyzed, and coded into a database by type of situation (fraud or no-fraud), months of experience, CFE versus non-CFE, and the number of fraud errors captured. The researcher will match the demographic information from the two studies so that a proper comparison can be administered.

Measurement

After stratifying the participants, they tested the hypotheses by running a series of statistical analyses in the SPSS program. Subsequently, multivariate analysis of variance (MANOVA) will be performed to measure the means from the four test cases: CFE fraud, CFE no-fraud, non-CFE fraud, and non-CFE no-fraud to determine statistical significance for both experiments. The following illustrates an example of descriptive statistics from this research study:

Test # 1: Multiple regressions

Equation 1

Trait Skepticism (Traits) = $\beta_0 + \beta_1$*CFE+ β_3*Incentives + β_4*AE + β_5*Incentives *Traits + β_6* Incentives *CFE + β_7* Incentives *AE + β_8*Traits*CFE + β_9*Traits*AE + β_9*CFE*AE

Where: P.S. = professional skepticism based on Nelson's (2009) model of P.S., Traits = Trait Skepticism, CFE = CFE designation; 1 = yes, 0 = no, A.E. = auditor's experience or rank, Incentives = external or internal incentives such performance appraisals or loss of reputation,

Audit experience was measured as follows: "0" indicated staff status (0-2 years), "1" indicated senior status (2-5 years), and "2" indicated manager status (5+ years). You may create two dummy variables: a staff dummy

(staff_dummy) where staff = 1 and seniors and managers = 0 and a senior dummy (SR_dummy) where senior = 2 and staff and managers = 0.

Incentives*Traits is the interaction of Incentives on trait skepticism, Incentives*CFE is the interaction of Incentives on CFE knowledge, Incentives*AE is the interaction of Incentives on auditor's experience, Traits*CFE is the interaction of trait skepticism on CFE knowledge, Traits*AE is the interaction of trait skepticism on auditor's experience, and CFE*AE is the interaction of CFE knowledge on auditor's expertise.

Consistent with my Hypothesis 1a, I expect positive and significant coefficients on β_2 and β_3, which establishes a positive relationship between trait skepticism, CFE designation, and professional skepticism.

Equation 2

Time Brainstorming (BS) = $\beta_0 + \beta_1$*PS+ β_2*CFE+ β_3*AE+ β_4*PS*CFE+ β_5*AE*CFE+ β_6*PS*AE

Where: BS = Time Brainstorming, CFE = CFE designation; 1 = yes, 0 = no, P.S. = professional skepticism, AE = auditor's experience or rank,

Audit experience was measured as follows: "0" indicated staff status (0-2 years), "1" indicated senior status (2-5 years), and "2" indicated manager status (5+ years). You may create two dummy variables: a staff dummy (staff_dummy) where staff = 1 and seniors and managers = 0 and a senior dummy (SR_dummy) where senior = 2 and staff and managers = 0.

CFE*PS is the interaction of CFE designation on professional skepticism, CFE*BS is the interaction of CFE on Brainstorming, and PS*BS is the interaction of professional skepticism on Brainstorming.

Consistent with my Hypothesis 2, I expect positive and significant coefficients on β_1, which establishes a positive relationship between professional skepticism and brainstorming time.

Equation 3

FD = $\beta_0 + \beta_1$*CFE + β_2*PS + β_3*AE + β_4*BS + β_5* PS *CFE + β_6* CFE *AE + β_7*CFE*BS + β_8*PS*AE + β_9*BS*AE+ β_{10}*PS*BS

Where: BS = Time Brainstorming, CFE = CFE designation; 1 = yes, 0 = no, P.S. = professional skepticism, AE = auditor's experience or rank,

Audit experience was measured as follows: "0" indicated staff status (0-2 years), "1" indicated senior status (2-5 years), and "2" indicated manager status (5+ years). You may create two dummy variables: a staff dummy (staff_dummy) where staff = 1 and seniors and managers = 0 and a senior dummy (SR_dummy) where senior = 2 and staff and managers = 0.

CFE*PS is the interaction of CFE designation on professional skepticism; CFE*BS is the interaction of CFE on Brainstorming; PS*BS is the interaction of professional skepticism on Brainstorming; CFE*AE is the interaction of CFE designation on auditor's rank; PS*AE is the interaction of professional skepticism on auditor's status, and BS*AE is the interaction of Brainstorming on auditor's level;

Consistent with Hypothesis 3, I expect positive and significant coefficients on β_1, which establishes a positive relationship between brainstorming time and fraud detection.

Equation 4

FD = $\beta_0 + \beta_1$*CFE+ β_2* PS + β_3 *BS + β_4*CFE*PS + β_5 *CFE*BS + β_6 *PS*BS

: F.D. = Fraud detection, CFE = CFE designation; 1 = yes, 0 = no, P.S. = professional skepticism, B.S. = Brainstorming, CFE*PS is the interaction of CFE designation on professional skepticism, and CFE*BS is the interaction of CFE on Brainstorming, and PS*BS is the interaction of professional skepticism on Brainstorming.

Consistent with Hypothesis 4, I expect a positive and significant coefficient on β_1, establishing a positive relationship between CFE designation and fraud detection.

A conceptual and operational definition of variables includes:

- Fraud detection (F.D.) – Number of frauds detected in the fraud, no-fraud cases.
- Certified Fraud Examiner (CFE) - The auditor has attained a CFE designation, 1 = Yes, 0 = No. Professional Skepticism (P.S.) – Auditors who exercise Professional Skepticism are required by SAS No. 99 to detect fraud measured by Hurtt's professional skepticism trait scale.
  The 30-item psychological scale measures six characteristics (a questioning mind, a suspension of judgment, a search for knowledge, interpersonal understanding, self-esteem, and autonomy): a Likert 6-point scale with "1" indicating strongly disagree and "6 "indicating strongly agree. It is designed to determine the level of skepticism an individual auditor holds.
- Brainstorming (B.S.)—SAS No. 99 requires Brainstorming to detect fraud. According to Hurtt's professional skepticism trait scale, I brainstorm ideas from audit team members who advocate as many original thoughts and unique solutions as possible (Blanchard, 2016).

Brainstorming was measured using the internals of time: "0" indicates 0-15 minutes, "1 "indicates 16-30 minutes, "2" indicates 31-45 minutes, "3" indicates 45-60 minutes, and "4" indicates more than 60 minutes. Dummy variables will be created for the three internals of time greater than 15 minutes.

Test # 2

MANOVA will be measured to test the statistical significance of the means from the CFE fraud case, CFE no-fraud case, non-CFE fraud case, and non-CFE no-fraud case variables for both experiments. Multivariate analysis of variance (MANOVA) is simply an ANOVA with several dependent variables. That is to say, ANOVA tests for the difference in means between two or more groups, while MANOVA tests for the difference in two or more vectors of ways.

Hypothesis Testing

Hypothesis 1 posits that auditors with a Certified Fraud Examiner (CFE) designation will exhibit higher professional skepticism than auditors without a CFE credential. Thus, H1 is a CFE designation and professional skepticism in fraud detection.

Table 3 demonstrates that research participants with a CFE designation lowered higher (134.38) on the Hurtt professional skepticism scale than non-CFE participants (120.95). The descriptive statistics support superior Hurtt scores for all levels of auditors tested. CFE staff auditors scored 120.4 versus 106.2 for non-CFE staff auditors, while CFE seniors acquired an average P.S. score of 132.75 versus 119.75 for non-CFE senior auditors. Furthermore, CFE managers had a P.S. average of 150 against 137 for non-CFE managers. Table 5 presents the results of H1 testing. A tiered estimation procedure shows the incremental gain in fit for the proposed hypotheses over the prior literature. Model 1 demonstrates that the CFE designation ($\beta 1=0.171$; $p<0.001$) has a significant, positive effect. This finding is consistent with previous results in the literature. Therefore, H1 is supported.

Hypothesis 2 predicts that audit teams with higher professional skepticism will spend more time brainstorming—the results of the descriptive statistics are displayed in Table 3.

	# of Auditors	**Hurtt PS Scale**			
Auditor Rank		CFE	Non-CFE	Average	SD
Staff	40	120.40	106.20	113.30	10.02
Senior	40	132.75	119.65	126.20	8.23
Manager	40	150.00	137.00	143.50	6.51

As you can see from Table 3, CFE participants exhibited higher P.S. levels for all levels of auditors that were tested. Accordingly, table 2 shows that, except for staff, auditors with a CFE designation spend more brainstorming time than non-CFE auditors.

	# of Auditors	**Average # of Fraud Detected**		**CFE**		**Non-CFE**	
Auditor Rank		Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case
Staff	40	1.69	2.33	39.55	36.40	39.80	34.45
Senior	40	2.44	0.84	42.20	36.70	34.85	35.70
Manager	40	3.53	0.13	36.50	36.80	32.05	29.15

However, P.S. did not positively correlate with brainstorming time for managers in both the fraud and non-fraud. Managers spend less brainstorming time than their less experienced counterparts. The researcher concludes that a significant reduction in brainstorming time is due to managers acquiring expertise in the auditing domain. Anderson (1982, 1985,1987) describes this form of intuition in the autonomous stage in his skill acquisition model. In the autonomous stage, a professional has achieved an expertise level of domain knowledge to the point that they acquire an awareness, intuition, or sixth sense to solve a wide variety of problems at an accelerated pace (Davis & Solomon, 1989). Hence, processing fraud cues for adjustments to the preliminary audit during Brainstorming becoBrainstorming

Additionally, H2 is further supported by a tiered estimation regression (Table 5), proving that professional skepticism enhances Brainstorming. ModBrainstorminge impact of professional skepticism on brainstorming time ($\beta_1=5.853$; $p<0.05$) is positive and significant. Therefore, H2 is supported.

The third hypothesis predicts a higher level of Brainstorming of fraud items. ANOVA, or test of variances, is presented in Table 4. Panel A of the table displays the descriptive statistics for the number of fraud items detected. Correspondingly, Panel B shows the related repeated-measures ANOVA with group type as the within-participants independent variable. This analysis is performed only for participants in the fraud condition, as the SEC identified fraud items for the fraud case. The main effect for group type presented in Panel B suggests that the

number of fraud items detected for CFE audit teams is significantly higher than those without the CFE designation ($p = 0.001$).

Additionally, H3 is further supported by a tiered estimation regression (Table 5) that provides further evidence that Brainstorming occurs. Model 2 shows that the impact of Brainstorming on fraud (β_1=4.533; $p<0.001$) is positive and moderately significant. Therefore, H3 is modestly supported.

Hypothesis 4 posits that audit teams with Certified Fraud Examiner (CFE) designation will detect more fraud items.

Table 1: Descriptive Statistics

	# of Auditors	Years of experience		Average # of Fraud Detected		CFE		Non-CFE	
Auditor Rank		Mean	SD	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case
Staff	40	0.98	0.42	1.69	2.33	2.36	1.37	0.99	3.25
Senior	40	3.26	1.18	2.44	0.84	3.42	0.38	1.82	1.83
Manager	40	7.04	1.70	3.53	0.13	4.59	0.02	2.77	0.28

Table 4: Results of a Repeated-Measures ANOVA of Presence of Fraud Between-Participants on Individual Audit Fraud Risk Assessments

Source of Variation	Df	SS	MS	F-Statistic	p-value
Between-Participants					
Presence of Fraud	1	3.76	3.76	3.65	0.032
Error	119	39.11	1.03		
Within-Participants					
Auditor	1	10.27	10.27	31.62	0.000
Presence of Fraud * Auditor	1	0.27	0.27		0.366
Error	118	12.34	0.33		

The descriptive statistics presented in Table 1, Panel A, and illustrated in Figure 1 show that the CFE audit team generated a mean number of 10.37 ideas in the fraud case, which was substantially more than non-CFE auditors 5.58, which is a higher number of fraud items. Managers, seniors, and staff averaged 4.59 ideas, 3.42 ideas, and 2.36 ideas. Pair-wise comparisons between the CFE audit team and each auditor rank suggest that these differences are significant between the brainstorming audit team and the manager ($t = 3.66$, $p< 0.001$) and the senior ($t = 4.92$, $p <0.001$) and the staff ($t = 8.65$, $p < 0.001$). The related repeated-measures ANOVA with group type as the within-participants independent variable. This analysis is performed for only participants in the fraud condition, as the "quality" fraud ideas were identified by the SEC for the fraud case. These findings are consistent with audit teams having process gains from stimulation and synergy, as Osborn (1957) suggested. However, H4 is supported.

Tables and figures

Table 1: Descriptive Statistics

	# of Auditors	Years of experience		Average # of Fraud Detected		CFE		Non-CFE	
Auditor Rank		Mean	SD	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case
Staff	40	0.98	0.42	1.69	2.33	2.36	1.37	0.99	3.25
Senior	40	3.26	1.18	2.44	0.84	3.42	0.38	1.82	1.83
Manager	40	7.04	1.70	3.53	0.13	4.59	0.02	2.77	0.28

Figure 1: Detection of Fraud Items

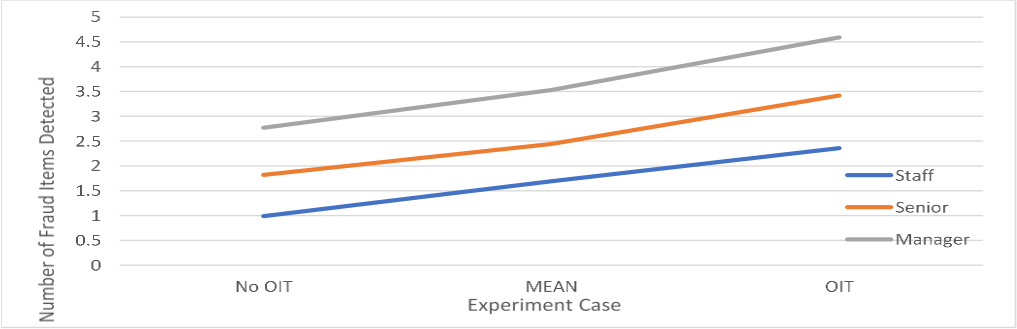


Table 2: Brainstorming Time

	# of Auditors	Average # of Fraud Detected		CFE		Non-CFE	
Auditor Rank		Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case	Fraud Case	No-Fraud Case
Staff	40	1.69	2.33	39.55	36.40	39.80	34.45
Senior	40	2.44	0.84	42.20	36.70	34.85	35.70
Manager	40	3.53	0.13	36.50	36.80	32.05	29.15

Figure 3: Professional Skepticism

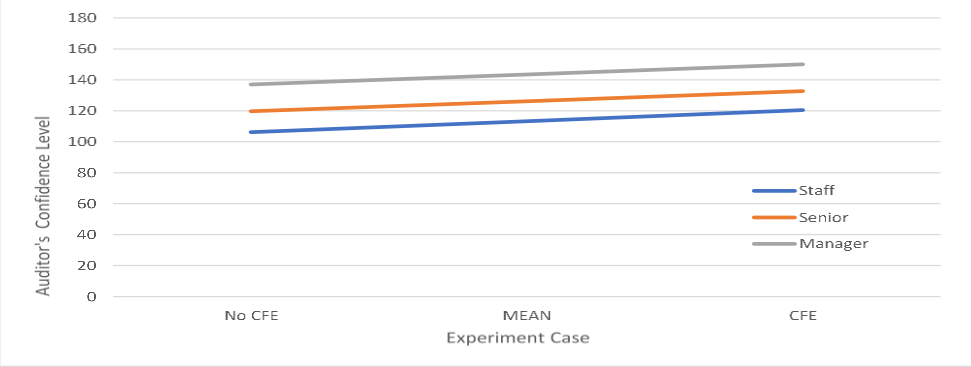


Table 3: Professsional Skepticism

	# of Auditors	Hurtt PS Scale			
Auditor Rank		CFE	Non-CFE	Average	SD
Staff	40	120.40	106.20	113.30	10.02
Senior	40	132.75	119.65	126.20	8.23
Manager	40	150.00	137.00	143.50	6.51

Table 4: Results of a Repeated-Measures ANOVA of Presence of Fraud Between-Participants on Individual Audit Fraud Risk Assessments

Source of Variation	Df	SS	MS	F-Statistic	p-value
Between-Participants					
Presence of Fraud	1	3.76	3.76	3.65	0.032
Error	119	39.11	1.03		
Within-Participants					
Auditor	1	10.27	10.27	31.62	0.000
Presence of Fraud * Auditor	1	0.27	0.27		0.366
Error	118	12.34	0.33		

Table 4: OLS parameter estimates

Variables [a, b]	Model 1	Model 2	Model 3	Model 4
Constant	3.749 (0.401)***	8.576 (0.443)***	9.042 (0.947)	9.042 (0.947)
CFE designation (CFE) (0=No, 1=Yes)	0.171 (0.069)***	0.638 (0.503)***	0.736 (0.344)***	0.871 (0.214)***
Incentives (I)	1.615 (0.386)**			
Traits (T)	4.638 (0.503)***			
Auditors Experience (A.E.)	4.271 (0.866)***	4.712 (0.686)***	4.969 (0.713)***	
Incentives * CFE (ICFE)	0.276 (0.165)*			
Incentives * Traits (I.T.)	7.490 (0.937)***			
Incentives * Auditors Experience (IAE)	6.897 (0.665)**			
Traits * CFE (TCFE)	0.793 (0.098)**			
Traits * Auditors Experience (TAE)	19.808 (3.598)*			
CFE * A.E. (CFEAE)	0.730 (0.341)***	3.006 (0.626)***	3.657 (0.718)	
Professional Skepticism (P.S.)		5.853 (0.388)**	5.753 (0.562)**	5.679 (0.391)***
CFE * P.S. (PSCFE)		3.734 (0.214)**	4.234 (0.428)**	4.946 (0.409)***
P.S. * Auditors Experience (PSAE)		27.579 (4.093)***	28.586 (6.657)***	
Brainstorming (BS)			4.533 (0.692)*	8.217 (1.017)**
CFE * B.S. (BSCFE)			3.336 (0.433)**	7.157 (0.707)**
B.S. * P.S. (BSPS)			17.458 (1.378)**	18.853 (1.883)**
B.S. * Auditors Experience (BSAE)			22.524 (4.477)***	
R-Square	.705	.781‡	,725	.974
Adjusted R-Square	.674	.73	.720	.853
F(sig.)	3.787***	3.458***	44.566	19.874
Maximum VIF	1.669	79.420	32.409	6.825
Dependent Variable (DV)	**Professional Skepticism (P.S.)**	**Brainstorming (B.S.)**	**Fraud Detection (F.D.)**	**Fraud Detection (F.D.)**

[b] Standard errors are given in parentheses.
‡ Denotes significant (at 0.05 level) R-Square change from a lower model
*** Significant at the 0.05 level.**
**** Significant at the 0.01 level.**
***** Significant at the 0.001 level**

Conclusion

This study aims to prove that auditors who possess a Certified Fraud Examiner designation will exhibit more significant professional skepticism, which allows them to have higher brainstorming sessions, thereby increasing their ability to detect fraud. As fraud increases, auditors have come under intense scrutiny from regulatory bodies and investors. The accounting professional passed SAS 99, Consideration of Fraud in a Financial Statement Audit, to combat this anxiety. Our experiment proves that CFE knowledge helps auditors identify more fraud items than auditors without organizational CFE credentials.

The study provides several implications about how a CFE designation can enhance an auditor's ability to detect fraud. First, the study contributes to the auditing domain by illustrating that the anti-fraud construct of CFE training and education improves auditors' cognitive skills. This increases their critical thinking and unstructured problem-solving skills, boosting the auditor's effectiveness and efficiency when evaluating financial items for material misstatement. The experiment further advances Bonner's (2008) request for additional research on initiates to improve auditor's judgment and decision-making quality (Chen et al., 2015). It extends Brickner et al. (2010) IRS study that demonstrated that students significantly improved their fraud-detection skills with proper training and development.

Second, this study extends Carpenter's work (2007) by providing that possessing CFE knowledge can augment an auditor's ability to detect fraud. PCAOB AS 2401 demands the auditor's exercise of professional skepticism throughout the import audit and stipulates that audit teams must perform a fraud brainstorming session to aid auditors in developing an awareness of possible fraud risk areas to improve effectiveness and efficiency (AS 2401.13). The study provides empirical evidence that audit teams with the CFE designations demonstrate more significant professional skepticism, which results in higher (more in-depth) brainstorming sessions as measured by time spent Brainstorming and fraud detection. This research allows auditors to develop better decision-making processes to improve fraud detection outcomes.

Finally, the study provides results that contribute to the accounting and auditing literature by triangulating the impact of CFEs designation on Nelson's (2009) model on professional skepticism, multi-level audit brainstorming teams, and fraud detection experimental environment. However, it is essential to contribute to practice by giving auditors and regulators descriptive data that improves professional skepticism. It neutralizes the previous PCAOB concerning detection quality and highlights a potential best practice for auditors to improve their fraud judgments.

This study is subject to several limitations. First, the explanatory power of this experiment is limited. One hundred and twenty auditors' observations reduce external validity because they need to generalize generalizability across the entire population of auditors. Another factor in generalizability is that the study only comprises auditors who worked in Wisconsin and Illinois. Suppose the attainment of the CPA indicates that the minimum required knowledge is equivalent across all 50 states. In that case, the Distinct of Columbia and its territories, the study sample auditor results from two states may represent different outcomes globally.

Two, the study only evaluates the effect of CFE designation and knowledge at a point in time. A longitudinal study could be more appropriate to analyze the long-term impact of CFE designation on fraud detection. Longitudinal data would provide the researcher with productive research because they could examine if repeated CFE designation would continue to provide incremental improvement in fraud detection.

Three, consistent with the Carpenter (2007) study, identified fraud errors in the study case and were the only ones identified by the Securities and Exchange Commission (SEC). The case studies can include other infractions. However, the researcher will only measure the five fraud types in the case studies to have a reliable benchmark for all auditors participating in the experiment.

A fourth limitation focuses on general domain knowledge (Bonner & Lewis, 1990). My study measures performance advantages due to industry specialization, educational level, company fraud training, or auditors. All these factors can affect the study results.

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