

**The Role of Experience in Professional Skepticism, Knowledge
Acquisition, and Fraud Detection**

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Abstract: Recent notable instances of accounting fraud have led to regulator and public concern over the failure of experienced auditors to detect frauds prior to the issuance of a company's financial statements. In response, the AICPA has issued a new auditing standard, SAS 99, *Consideration of Fraud in a Financial Statement Audit*, in an effort to help auditors better assess fraud risk, detect fraud symptoms, and sharpen professional judgment as to whether a fraud has actually been committed in a firm. The purpose of this study is to examine the role of experience in increasing professional skepticism, knowledge acquisition, and ability to detect fraud. We suggest that the typical audit environment does not provide auditors with the type of experience, i.e., practice and feedback with fraud, which is necessary for successful fraud detection. Results of an experiment indicate that audit novices who have received practice and feedback with fraud detection exhibit a higher level of skepticism and knowledge about fraud and are better able to detect a fraud when it exists than individuals with typical audit experience.

Keywords: *Auditor, Fraud Detection, Skepticism, Experience, Knowledge Acquisition*

I. INTRODUCTION

The Association of Certified Fraud Examiners (ACFE) (2002) estimates that six-percent of U.S. revenues will be lost in 2002 as the result of fraud, which when applied to the Gross Domestic Product translates to losses of approximately \$600 billion. Recent instances of audit failures related to financial statement fraud (e.g., ImClone, Global Crossings, Xerox, WorldCom, etc.) have proved costly to the accounting profession as well. This cost is not only measured in dollar terms, but also in terms of lost reputation and investor confidence in capital markets. The apparent inability of auditors to detect financial statement fraud has prompted regulators, practitioners, and academics to examine the question, “Why do experienced auditors often fail to detect fraud?”

There are several factors that contribute to this failure. The Public Oversight Board (POB) Panel on Audit Effectiveness suggests that one factor might be that auditors do not possess an appropriate level of professional skepticism (POB, 227 and 86). The underlying assumption is that if auditors were more skeptical (i.e., assumed a more doubtful or questioning attitude), then they would assess a higher probability that fraud exists in the planning phase of an audit, which should ultimately lead to an increase in fraud detection. While raising skepticism is necessary, accounting research suggests that even auditors who are more skeptical still fail to detect fraud (Jamal, Johnson and Berryman 1995; Zimbelman 1997). Several studies suggest this is because auditors lack the knowledge necessary to identify relevant risk factors while in the process of conducting an audit (Hoffman and Patton 1997; and Braun 2000). To overcome these potential weaknesses, the American Institute of Certified Public Accountants (AICPA) (2002) has issued Statement on Auditing Standards (SAS) No. 99, *Consideration of Fraud in a Financial Statement Audit*, that provides educational guidelines to aid auditors in fraud detection and requires auditors to place an increased emphasis on professional skepticism.

The purpose of this paper is to examine the requirements and suggestions included in SAS No. 99 and to more specifically examine the role that experience plays in increasing professional skepticism, knowledge acquisition, and auditor ability to detect fraud. We propose that while skepticism and knowledge are important factors in fraud detection, it is an individual's experience (defined as practice and feedback) with fraud detection rather than his experience with auditing financial statements that enables him to successfully detect fraud. We suggest that the reason experienced auditors may not be good at detecting fraud is because in the typical audit engagement, auditors do not encounter fraud and if they do, they often fail to detect it. Thus, the normal audit environment does not provide auditors with the necessary practice and feedback with fraud to enable them to detect frauds in the future. Based on research in psychology and accounting, we predict that practice and feedback with fraud will increase professional skepticism and knowledge acquisition more than experience with financial statement audits will. In addition, we predict that practice and feedback with fraud can mitigate the effects of cognitive biases (e.g., dilution effect and conservatism) that may lessen an auditor's ability to detect fraud.

To test our predictions, we conducted an experiment using a fictitious company in which, unbeknownst to the participants, a financial statement fraud had been committed. Participants were asked to assume the role of the company's auditor and their attention was drawn to the line item that contained a potential misstatement. To examine the role of experience, participants came from groups that had essentially two different types of experience. The first group consisted of individuals with several years of financial statement audit experience (denoted experienced auditors) at a Big 5 accounting firm. The second group was comprised students with no actual auditing experience (denoted audit novices) who had completed an accounting course in which they received practice with feedback identifying asset theft frauds in the classroom. Each group's level of skepticism was estimated in the first phase of instrumentation from its initial assessments

of the likelihood that the financial statements were either unintentionally or intentionally misstated (i.e., were caused by either error or fraud, respectively). In the second phase, participants' knowledge was estimated based on their ability to distinguish relevant fraud risk factors from a list of fifteen facts about the company. Finally, phase three assessed whether participants assimilated the risk factors from phase two into their fraud probability assessments by once again asking participants to indicate the likelihood that the financial statements were either unintentionally or intentionally misstated.

We find that the audit novices with practice and feedback in fraud detection indicated greater skepticism than the experienced auditors by assigning a higher initial likelihood that a misstatement was due to fraud rather than error. In addition, the audit novices attributed a higher level of relevance to key risk factors that indicated the possibility of fraud than did the experienced auditors, which suggests greater knowledge acquisition by the novices than the experienced auditors. Finally, we find that after assimilating the risk factors, audit novices were more apt to assess a greater final likelihood that a misstatement was due to fraud rather than error. From these results we conclude that the experienced auditors were less apt to detect a fraud when it existed than the audit novices who have received simulated experience through specific training in asset theft detection.

These results have important implications for practitioners. First, the typical audit environment does not provide auditors with the type of experience needed to increase skepticism and the depth of fraud knowledge necessary to identify frauds. Further, instruction alone, as typically provided to practitioners, is not enough to increase performance in fraud detection. Carried to a logical conclusion, these implications provide some evidence that the adoption of SAS No. 99 may not in itself lead to increased fraud detection by auditors. Rather, the results indicate that it may be necessary to combine the instruction provided by SAS No. 99 with training programs that include

practice and feedback before noticeable results in an auditor's performance in fraud detection are achieved.

This study contributes to the literature that describes the role of experience in auditor judgments. In particular, we find that when experience is defined as practice with feedback detecting asset theft frauds, even audit novices who have not had practice detecting financial statement frauds become more skeptical, knowledgeable, and accurate at fraud risk assessments of a financial statement fraud than experienced auditors. A key difference in our study and prior studies is that we examine a type of experience, fraud detection experience, that does not typically increase with audit experience while most prior studies examine tasks in which experience can be described in terms of an auditor's length of tenure. Our findings support those studies that show experience (defined as practice with feedback) can lead to knowledge acquisition and can reduce the dilution effect caused by the presence of irrelevant information. Our results provide new information that may potentially be generalized to other decision-making settings on the effect of experience on skepticism and the reduction of conservatism in probability assessments, topics not previously subjected to empirical investigation.

The remainder of this paper is organized as follows. The next section develops the model and hypotheses. The third section describes the experiment. The fourth section discusses the statistical tests and results. The final section provides concluding remarks.

II. BACKGROUND AND DEVELOPMENT OF HYPOTHESES

Failure to detect an existing fraud in a firm's financial statements is costly to auditing firms. It has become apparent that, as a profession, we need to consider how we can help auditors become more adept at detecting frauds before financial statements are issued. Successful fraud detection requires that the auditor consider the possibility that it exists, then conduct audit procedures to find it, and finally, draw the proper conclusion. To accomplish these objectives, auditing standards require that the auditor perform three

steps: (1) assess the initial likelihood of fraud in the planning phase, (2) conduct audit procedures identifying relevant risk factors in the fieldwork phase, and (3) use professional judgment to synthesize evidence collected in the wrap up phase (Loebbecke, Eining, and Willingham 1989). In recent POB and AICPA literature, the auditor's ability to perform these steps has been questioned (POB 2000, 76; AICPA 2002).

Discussed in greater detail below, we suggest that practice with feedback in fraud detection is essential to the auditor's completion of these three steps. As depicted in Figure 1, we posit that experience (as defined as practice and feedback) with fraud detection, leads to increased skepticism and knowledge acquisition. While increased skepticism should cause auditors to assess higher probabilities of the likelihood of fraud in the planning phase, knowledge would lead to better identification of relevant risk factors during fieldwork. The combined effect of auditor skepticism and knowledge provides depth to professional judgment, thus increasing ability to detect fraud when it exists.

| Insert Figure 1 here |

As indicated earlier, regulators have recently recognized the intuitive links between auditor skepticism, auditor fraud knowledge and an auditor's ability to detect fraud (POB 2000, 82). Psychology and accounting research provides a theoretical link suggesting that both skepticism and knowledge can be gained through repeated practice and feedback with fraud detection. We propose that because fraud is rarely encountered in the typical audit engagement, and if encountered, often goes undetected, auditors do not have the opportunity to gain the repeated experience with fraud that is necessary to increase their skepticism and knowledge. This deficit in experience leads to a failure to detect fraud. Restated, we propose that if auditors did have experience with fraud (as defined as practice and feedback with fraud), then they would (1) exercise more skepticism in the planning phase (as evidenced by higher initial assessments of the likelihood of fraud), (2) have more knowledge during fieldwork (as evidenced by better

identification of relevant risk factors), and (3) be more apt to detect fraud through synthesis of the information collected during the audit (as evidenced by higher final assessments of the likelihood of fraud).

(1) The Role of Experience in Increasing Skepticism

Past audit standards require auditors to exercise professional skepticism, which means have an attitude that includes a questioning mind and a critical assessment of audit evidence. In other words, the auditor neither assumes that management is dishonest nor does he assume unquestioned honesty (AICPA 2002). The POB recommends that auditors should modify this somewhat neutral concept of skepticism and adapt the more skeptical view used by forensic experts (POB 2000, 88) such that they assume management is dishonest unless there is evidence to the contrary (POB 2000, 76). SAS No. 99 concurs and requires auditors to put aside any prior beliefs as to management's honesty (AICPA 2002).

The need for increased skepticism stems from the view that to detect fraud, the auditor must, in the planning phase of an audit engagement, believe in the possibility that it exists. This more skeptical attitude or belief in the possibility of fraud should lead auditors to assess a higher initial likelihood that fraud exists, which should in turn, lead to the development of an audit program that is more likely to detect fraud.

Psychology research suggests that simply requesting auditors to be more skeptical, may not lead them to assess a higher probability that fraud exists within a firm and that instead, auditors need to experience fraud to increase such probabilities. In particular, Tversky and Kahneman (1974) describe the availability heuristic, which indicates that people assess the probability of an event occurring based on the ease with which examples of that event can be brought to mind. Experience with or familiarity with

an event increases or makes the event more available in memory.¹ Based on Tversky and Kahneman's findings, the likelihood or probability assessed by an individual that a fraud has been committed should be directly related to whether the individual can easily recall a number of instances of fraud within his own environment. Because auditors in the typical audit environment may rarely encounter an actual fraud, they may assess a smaller probability that fraud exists within a particular company than does an audit novice who has experienced a fraud. Restated, audit novices who have practice and feedback in fraud, should more easily bring instances of fraud to mind and will, thus assess a higher probability of a fraud than auditors who have years of financial statement audit experience.

H1: Audit novices who have received practice and feedback in fraud detection will assess a greater initial likelihood that fraud exists within a firm than experienced auditors.

(2) The Role of Experience in Knowledge Acquisition

Assessing a greater risk of fraud in the planning stage of an audit will not necessarily lead to increased fraud detection. For example, Zimbleman (1997) finds that auditors who assess a greater risk of fraud during planning, still fail to detect fraud. In addition, the POB (2000) reports that auditors often overlook obvious risk factors and fail to follow up on exceptions, which results in frauds going undetected (POB 2000, 224). To overcome these shortcomings, the POB recommends that forensic audit procedures specifically designed to identify risk factors be performed during the audit and SAS No. 99 has incorporated many of these recommendations.

Prior research on experience and knowledge provides insight as to why auditors, despite assessing a greater initial fraud risk assessment, may still be unsuccessful at detecting frauds. For example, Braun (2000) suggests the reason that even more skeptical

¹ For example, one may assess the risk of contracting cancer by recalling the number of acquaintances one has who have cancer. Individuals who can recall more acquaintances with cancer will assess the risk of contracting cancer greater than individuals who can recall fewer acquaintances with cancer.

auditors overlook frauds is because they lack the depth of knowledge required to conduct an audit while simultaneously identifying relevant risk factors. Bonner and Walker (1994) show that knowledge is acquired when instruction is combined with experience, defined as practice with feedback. Specifically, Bonner and Walker find that merely giving someone instruction without allowing them practice with feedback does not result in the acquisition of knowledge. This finding suggests that providing individuals with practice and feedback in fraud might be necessary for a depth of knowledge to be acquired that will lead to identification of fraud risk factors.

In the case of fraud detection, auditors are often given instruction in various formats (e.g., checklists, professional education, etc.); however, they rarely receive the practice and feedback necessary for knowledge acquisition. For example, while most accounting firms train their auditors on the identification of fraud-related risk factors, the scarcity of frauds in the audit environment provides the auditor with little to no opportunity for practice in fraud detection or feedback. Thus, we propose that audit novices who have both fraud detection instruction and experience (i.e., practice and feedback with fraud) may better assess the relevance of fraud risk factors within a firm's environment than experienced auditors.

H2: Audit novices who have received practice and feedback in fraud detection will more accurately assess the relevance of fraud risk factors than experienced auditors.

(3) The Role of Experience, Skepticism, and Knowledge In Fraud Detection

Research indicates that two cognitive biases, the dilution effect and conservatism, can negatively impact the accuracy of auditors' final fraud risk assessments even when they have recognized the relevance of risk factors. In other words, even after acknowledging the presence of fraud risk factors, auditors may still not believe a high likelihood that fraud exists. The dilution effect pertains to how auditors synthesize risk factors that come to their attention during the course of an audit. Conservatism affects how auditors update their probability assessments of the existence of fraud based on that

synthesis. We propose that enhanced skepticism and knowledge resulting from experience with fraud detection may reduce these biases such that more accurate fraud detection conclusions can be drawn.

The dilution effect

A dilution effect occurs when the presence of irrelevant information causes an individual to make more regressive or less extreme decisions than might be indicated by relevant information. Cognitive researchers believe that the presence of the irrelevant information weakens the implication of the relevant information in the individual's decision-making process (Nisbett et al. 1981). In accounting, several studies indicate that auditors' fraud-risk assessments can be biased by the dilution effect. For example, Hackenbrack (1992) finds that auditors' fraud risk assessments become less extreme when they are presented with both relevant and irrelevant information or risk factors. In addition, Hoffman and Patton (1997) replicate Hackenbrack's results and find that neither time pressure nor accountability reduces the dilution effect in auditors' fraud risk assessments.

Researchers have typically explained the dilution effect in terms of individuals' similarity-based reasoning processes. For example, auditors appear to be vulnerable to dilution because they must predict whether or not a fraud has occurred within a firm based on the similarity between their perception of the symptoms of a fraud and the relevant risk factors they observe (Hackenbrack 1992; Hoffman and Patton 1997). Because any relevant risk factors will be surrounded by and imbedded in numerous irrelevant factors, the perceived similarity will be reduced and so will the auditors' perception of fraud, even in the presence of relevant risk factors.

Conservatism

Conservatism refers to the tendency of individuals to revise probability estimates more slowly than warranted by new information (Phillips and Edwards 1966; Plous

1993).² Conservatism can affect an auditor's judgment that a fraud has occurred because during the course of an audit engagement, auditors acquire new information, some of which is related to the likelihood that fraud has occurred within the firm. Therefore, they must continuously update their estimates of the likelihood of fraud as they conduct audit procedures. If auditors are affected by conservatism, they will not make appropriate revisions based on the evidence collected. As a result, their final fraud probability assessments will be too low, and thus, frauds may go undetected.

The outcome of both the dilution effect and conservatism is essentially the same. In each case, the impact of relevant risk factors on an auditor's assessment of fraud will be weakened. However, research indicates that both the dilution effect and the results of conservatism may diminish with experience. The dilution effect is moderated by experience because individuals who have experience with a task acquire highly developed knowledge structures (i.e., the way knowledge is organized in memory) related to that task. Such knowledge structures enable experienced individuals to focus on relevant information even in the presence of irrelevant information (Patel and Groen 1986; Lesgold et al. 1988; Shanteau 1993).

In accounting, several studies collectively find that inexperienced auditors use different information search strategies than experienced auditors and that these differences leave experienced auditors less vulnerable to a dilution effect from the irrelevant information retrieved in their searches (Biggs and Mock 1983, Bouwman 1984, Biggs et al. 1987). Shelton (1999) also finds that even when both experienced and

² In a classic example, Edwards (1968) describes two bags that contain 1,000 poker chips each. While one bag (denoted the red bag) contains 700 red chips and 300 blue chips, a second bag (denoted the blue bag) contains 700 blue chips and 300 red chips. If a coin is to be flipped to determine from which bag to pick a chip, the probability that either bag is chosen is 0.5 in the absence of any additional information. However, when experimental subjects are given additional information about a sample of chips drawn (e.g., of 12 chips drawn, 8 are red and 4 are blue), subjects do not make an appropriate upward revision to their probability estimates that the bag from which the chips were drawn was the red bag (e.g., subject estimates typically fall within 0.7 and 0.8 when the true probability is 0.97).

inexperienced auditors recognize relevant facts, only the experienced auditors are able to ignore irrelevant facts when making audit judgments.

However, further studies imply that type of experience may matter. For example, Dougherty et al. (1999) state that the proper calibration of probability estimates can only be achieved through “extensive practice with a specific task that lends itself to timely and accurate feedback.” Thus, it is possible that in the case of auditors, years of experience may not be enough to mitigate the effects of dilution and conservatism. Rather, it is possible that even an audit novice, who has practice and feedback in detecting different types of fraud, may attach a more accurate weight to relevant risk factors than experienced auditors. Therefore, we propose that it is possible that audit novices who have practice and feedback with fraud may begin their assessment of fraud risk with an initial higher skepticism, may more accurately assess the fraud-risk environment of a firm, may be less distracted by irrelevant information, and thus may make more accurate revisions to their fraud risk assessments than experienced auditors. The result would imply that audit novices may perceive a greater likelihood that fraud exists in a situation where it actually does exist than auditors with financial statement audit experience.

H3: Audit novices who have received practice and feedback in fraud detection will assess a greater final likelihood that fraud exists in a firm after synthesis of fraud risk factors than experienced auditors.

III. THE EXPERIMENT

Participants

Two groups of participants were used in this study, each with a distinct type of experience: years of financial statement auditing versus practice and feedback with fraud detection. The first group consisted of eighteen senior auditors from a Big 5 audit firm, who had an average 3.6 years (standard deviation = 0.92) of auditing experience. The second group consisted of eighteen graduate accounting students enrolled at a large state university who had recently completed an accounting course in which they had been

taught fraud detection using role-play, practice, and feedback³. As mentioned previously, the frauds they detected in this course were asset theft frauds. These participants had an average of only .64 years (standard deviation = 1.01) of work experience, and thus, we consider that they have virtually no audit experience. Conversely, the auditors in the first group had no fraud detection experience.⁴

Task

Assuming the roles of auditors, participants read and answered questions about a hypothetical wholesale office supply company. Unbeknownst to the participants, a fraud had been committed within that company that was “hidden” in accounts receivable.⁵ The experiment was administered in two separate sections with the first section being collected prior to the second section’s distribution to prevent participants from changing previous responses. The first section’s materials included background information about the company, the company’s financial statements, and a statement indicating that analytical procedures performed by the participant’s supervisor indicated that the bad debt expense account was either unusually high or unusually low.⁶ The second section of the experiment included a set of fifteen facts (i.e., potential fraud risk factors) that the participants were told had come to their attention during the course of the audit.⁷ While some of the facts were irrelevant, some were relevant to the bad debt expense account and/or motivation or opportunity for fraud. A copy of the instrument is included in the Appendix.

³ The course was taught using the problem-based learning methodology. For more information, see Durtschi 2002.

⁴ Participants were asked in a post-experiment questionnaire whether they had any experience in fraud detection or with fraud in general. All participants indicated they had no experience with either.

⁵ The financial statements and fraud used in the instrument were adapted from Lindberg (1999).

⁶ Two versions of the experiment were randomly assigned to control for any effects that might be due to the direction of the potential misstatement. No differences were predicted between these two groups a priori and there were no statistical differences noted during data analysis.

⁷ In order to control for order effects, the order of these fifteen factors was randomly varied such that three versions of the experiment were used. No statistical differences were noted during data analysis between the three versions.

Three steps were taken to mitigate potential demand effects related to the audit novices who had had a course that emphasized fraud. First, a professor that was not associated with the forensic course distributed the instrument and instructed the students that they were participating in a study on financial statement audits. Second, the instrument used the phrases “intentional misstatement” and “unintentional misstatement” instead of “fraud” and “error.” Third, the fraud embedded in the instrument materials was of a different nature than that which was dealt with in the classroom. Specifically, the experiment incorporated a financial statement fraud, while the frauds solved in their course were asset-misappropriation or hidden asset frauds.

Dependent Variables

Three dependent variables were measured during instrumentation to capture each participant’s level of skepticism, knowledge about fraud, and ability to detect fraud.

Skepticism

To capture skepticism, we asked each participant to indicate his initial belief that the potential misstatement reflected in the unexpected change in bad debt expense was due to error or fraud. Specifically, participants were asked to assign a probability that the financial statements were **unintentionally** misstated (i.e., due to error), followed by a probability that the financial statements were **intentionally** misstated (i.e., due to fraud) (bolds as were in the instruments). The eleven-point scale used for assigning the probability ran from 0 for “not at all likely” to 10 for “extremely likely.”

Fraud Knowledge

To assess the participants’ level of knowledge about fraud, participants read fifteen facts that they were told had come to their attention during the course of the audit. The participants were asked to rate each fact’s relevance to the large change in bad debt expense using an eleven-point scale beginning at 0 indicating “not at all relevant” and going to 10, indicating “extremely relevant.” A forensic expert, a special agent at the Federal Bureau of Investigation with over 20 years of experience in white-collar crime

and financial statement fraud, provided his benchmark estimate of the relevancy of each item. Column 1, Table 1, lists the fifteen facts used during instrumentation.

The expert divided the facts into three categories: account-related, fraud-risk environment related and irrelevant. The account-related facts were all considered very relevant with an expert rating of “9.” These facts are listed as items 1-4, in Table 1. These facts are those that an auditor might have learned had he made specific inquiries about the bad debt expense account in an attempt to determine whether there was a logical reason for the large change. Facts 5 through 12 were considered by the expert to be fraud risk factors related to either the business environment in which the firm operates or incentives and pressure upon management or other employees.⁸ The expert gave each of these facts a relevancy assessment between 2 and 9. The final three facts (items 13-15) were all considered irrelevant by the expert and given a relevancy rating of “0”.

| Insert Table 1 here |

Ability to Make an Accurate Fraud Risk Assessment

Our third dependent variable measures the participants’ ability to detect the fraud after consideration of the fifteen risk factors. In the last part of the experiment, each participant was asked to again provide their assessment of the likelihood that the financial statements were **unintentionally** misstated (i.e., due to error) and their assessment as to the likelihood that the financial statements were **intentionally** misstated (i.e., due to fraud). As in the first phase, these assessments were indicated on an eleven-point scale that ran from 0 for “not at all likely” to 10 for “extremely likely.”

⁸ SAS No. 99 specifically mentions that auditors must consider the business environment and any such incentives or pressures when considering the possibility that fraud has been committed within a firm (AICPA 2002, Appendix A).

IV. RESULTS

Hypothesis one predicts that audit novices with practice and feedback in fraud detection will demonstrate greater skepticism by assessing a greater initial likelihood that a highlighted area of concern (bad debt expense) was an intentional misstatement than individuals who have typical audit experience (i.e., experienced auditors). The results are shown in Table 2.

| Insert Table 2 here |

The results support hypothesis one with the audit novices (mean = 5.23) recording a significantly higher ($p = 0.013$) initial likelihood that the reported bad debt expense was the result of an intentional misstatement than the experienced auditors (mean = 3.60). While the audit novices assessed a higher likelihood of fraud than the experienced auditors, they assessed virtually the same ($p = 0.706$) likelihood that a misstatement related to bad debt expense was the result of fraud (mean = 5.23) as they did for error (mean = 4.98). The experienced auditors, on the other hand, assessed a significantly higher ($p = 0.008$) likelihood that the bad debt expense misstatement was an error (mean = 5.13), rather than a fraud (mean = 3.60). From these results, we conclude that the participants who had received practice and feedback in fraud detection were initially more skeptical than auditors. Further, we find evidence that the novices were not yet committed to the notion that it was a fraud while the auditors were more committed to the idea that the reported number was due to error.

Hypothesis two predicts that individuals who have received practice with feedback in fraud detection will more accurately identify the relevance of fraud-related risk factors within a firm than experienced auditors. This hypothesis was tested by providing the participants with a list of facts with the explanation that all were pieces of information that had come to their attention during the course of the audit. Participants were instructed to rate each fact as to its relevance to the reported bad debt expense. Table 3 lists the facts in the same order as shown in Table 1. Column (a), Table 3, repeats

the relevance assessment given by the expert for each fact. Columns (b) and (c) show the mean relevance-rate assigned by the novices and the auditors, respectively. Column (d) displays the probability associated with the t-statistic for the difference in means between the novices and auditors.

| Insert Table 3 here |

For the first four facts listed, all considered account-related and relevant by the expert, there were no significant differences in the relevance assigned by the novices and the relevance assigned by the auditors. In other words, both groups realized these facts were relevant to the change in bad debt expense. In the last three facts—those considered irrelevant by the expert—both the novices and auditors on average, assessed more relevance than the expert did. There was not a significant difference on fact number 13 between the relevance assigned by the novices and auditors, but the novices did assign a higher relevance than auditors to facts 14 and 15. While the auditors' ratings were lower on average than the novices, the novices gave their lowest average rankings to these facts while the auditors' responses were mixed.

It is in the group of facts numbered 6 through 12 where the difference between the two groups is most noticeable. These facts are all related to the environmental context in which the accounting numbers are prepared or more specifically, to the pressures and opportunities to commit fraud. In facts numbered 7 through 11, the auditors underestimate the expert as to the relevance of the facts. In facts numbered 8 through 11, the novices provide a relevance rating closer to the expert. On fact number 7, novices and auditors were equally close to the expert. Only in the 12th fact, which the expert ranked fairly low, did the auditors assess a relevance rating closer to the expert.

The results, therefore, support the hypothesis that the audit novices who had received practice and feedback in detecting fraud were more accurately able to assess the relevance of fraud risk factors related to the firm environment than the auditors were. It should also be noted that the novices saw all but three of the factors as more relevant than

the experienced auditors which should be taken into account when training perhaps by emphasizing that while increased skepticism is good, it does not particularly indicate that every fact is suspicious.

Hypothesis three predicts that audit novices who have experience in fraud detection will better synthesize risk factors into their assessment of fraud risk because their experience will moderate the dilution effect and conservatism. Therefore, Hypothesis three predicts that audit novices will assess a greater likelihood that a potential misstatement in reported bad debt expense is intentional (i.e., caused by fraud) after reviewing the additional pieces of information collected during the course of the audit. Table 4 shows the results for Hypothesis three.

| Insert Table 4 here |

In the final fraud-risk assessment, novices assess a significantly higher likelihood that the bad debt expense was the result of fraud than do auditors ($p < 0.001$). Novices also assess a significantly lower likelihood that the reported bad debt expense was the result of an error than did the auditors ($p < 0.001$). Also of interest (row 3) is that the novices exhibit a significant difference between their assessments of fraud versus error ($p < 0.001$), thus committing to the notion that the reported number is the result of fraud. The auditors, however, are split on their fraud versus error assessments, thus failing, on average, to adjust their assessments to consider the additional facts introduced.

Earlier we hypothesized that this result would arise because individuals with practice and feedback in fraud detection would moderate the dilution and conservatism biases. Thus, even novices who had practice with feedback in fraud detection would have larger upward revisions in their fraud probability assessments. To further test Hypothesis three, we examine the direction and extent to which each group of participants made revisions to their probability assessments. Table 5 presents these results.

| Insert Table 5 here |

Table 5 (row 1) shows that the mean revision for both the audit novices and the auditors were significantly different than zero ($p < 0.001$). Although the audit novices' revisions (mean = 2.51) were greater than the auditors' revisions (mean = 2.25), these differences were not significantly different ($p = 0.320$). However, these results do not control for the fact that the audit novices had less upward movement available to them because of the use of a fixed endpoint scale. Restated, because the novices had higher initial fraud probability assessments, they had less scale-points available to them for upward revision. Row 2 of Table 5 shows that the novices had an average of only 4.76 scale points available to them to upwardly revise, while auditors had an average of 6.31 scale points. To control for these scaling issues, row 3 reports the percentage of the possible scale movement that was actually used by the participants (i.e., row 1 divided by row 2). These results indicate that the audit novices utilized an average of 53% of their possible scale remaining in their upward revisions, while auditors only utilized 33% of their possible scale and that this difference was significant ($p = 0.004$). While not conclusive, the results indicate that the audit novices were less conservative in their probability revisions and/or less influenced by the dilution effect.

In summary, we find support for Hypothesis one that audit novices who have received practice and feedback in fraud detection exhibited more skepticism by assessing a higher initial likelihood that a reported number was due to fraud than did participants with financial statement audit experience. This result lends support to the notion that experience, cannot always be measured as years of audit experience, rather it should be measured as actual practice and feedback. It also demonstrates that practice with feedback can simulate the experience implied by the availability heuristic posited by Tversky and Kahneman (1974) by providing novices with "experiences" in memory that result in raised probability assessments. We also find some support for Hypothesis two as the audit novices more accurately identified the relevance of fraud risk factors related to firm environment than did the experienced auditors. These results support the work on

expertise, which shows that knowledge is acquired when instruction is supplemented with practice and feedback (Bonner and Walker 1994). Finally, we find support for Hypothesis three, providing some evidence that practice with feedback will moderate the dilution effect and conservatism, thus enabling even novice auditors to make less conservative revisions of their assessment of the likelihood of fraud after considering the additional fraud risk factors than auditors.

V. CONCLUDING REMARKS

The accounting profession has been under assault for several years because of a seeming inability of auditors to detect frauds prior to the issuance of a company's financial statements. The AICPA has issued a new auditing standard (SAS No. 99) in an effort to help auditors better assess fraud risk, detect fraud symptoms, and sharpen professional judgment as to whether a fraud has actually been committed in a firm. The purpose of this study was to examine the requirements and suggestions included in this standard and to test whether the type of experience an individual has acquired plays an essential role in helping him make accurate fraud risk assessments.

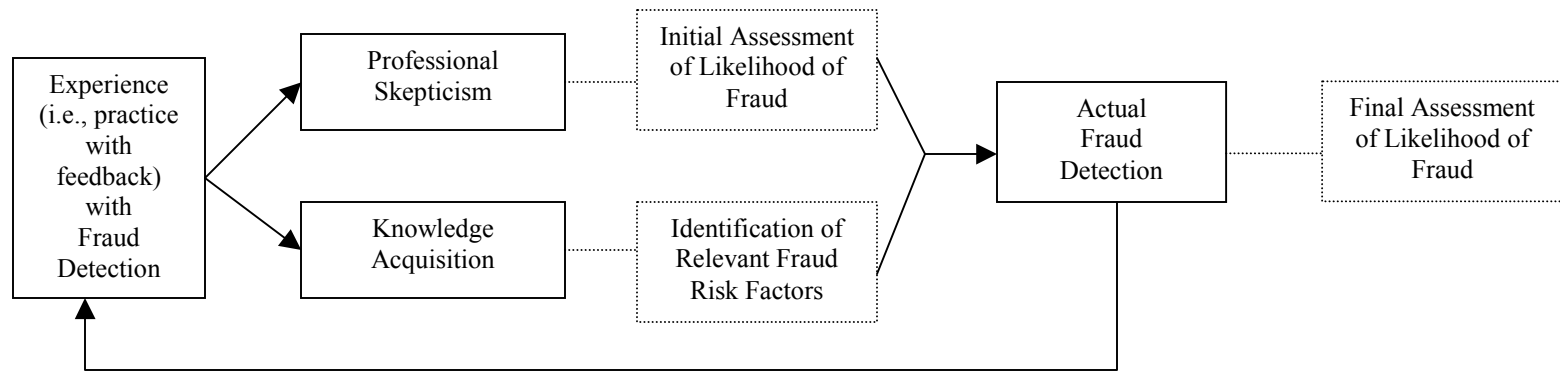
We found that audit novices, when given practice with feedback in fraud detection, exhibited a higher level of skepticism when a reported financial statement amount was reported to have fallen outside a normal range than did experienced auditors who knew they were to practice professional skepticism. We further found that novices were better able to recognize the more subtle fraud-related clues that inform an auditor about the context in which the accounting records were created. Finally, our findings both support and extend existing research on the dilution effect and conservatism. The auditors, while recognizing the relevance of some pieces of information, seemed to place more weight on irrelevant factors, did not adequately revise their estimates of the fraud likelihood, and thus, on average, failed to detect the fraud.

Prior studies show the dilution effect among less experienced auditors (in the typical audit environment) can be mitigated by experience (Shelton 1999). The results of the current study support the notion that experience does not need to be a function of years on the job, rather that experience can be replicated in the proper training environment that provides practice with feedback. Further, we show that this specific type of experience can mitigate conservatism in the revision of fraud likelihood estimates. Because both the dilution effect and conservatism can negatively affect an auditor's ability to detect fraud, these cognitive biases must be moderated.

There are many questions left unanswered by this study. How much practice is necessary before these results are achieved? What are the long-term implications of this type of training (i.e., how often will auditors have to be retrained)? Are these results affected by the recency of experience? Finally, while audit standards suggest increased skepticism is good, how do we increase skepticism without causing auditors to over identify the relevance of fraud-risk factors?

The need to train auditors to detect fraud has become vital to the accounting profession. Despite the questions raised above, there are some important training implications in this study. In particular, we learn that auditors need practice and feedback in fraud detection in addition to instruction to increase their skepticism and knowledge, and thus, ability to detect fraud. While it is not reasonable to expect auditors to receive such experience in the typical audit environment, this study suggests that training programs that include practice with feedback might be an appropriate vehicle for conveying the benefits of fraud experience to auditors. While leaving many questions unanswered, this study provides a starting point for discussions into the best way to train auditors to detect fraud.

Figure 1: Model of the Role of Experience, Professional Skepticism, and Knowledge in Fraud Detection



Key: —> indicates a theoretical link -.-.- indicates an observation of the construct

Table 1: Facts Included in Experimentation

Fact Provided to Participant in the Experiment		Expert Relevancy Rating	Explanation Provided By The Expert To Justify The Ranking
Account-Related Items			
1.	“There was no unexpected increase in sales from year to year.”	9	An unexpected increase in sales could explain an increase in the allowance for doubtful accounts, thus bad debt expense.
2.	“Credit granting standards have not changed in the last year.”	9	Loosened or tightened credit standards might explain a sudden shift in bad debt expense.
3.	“Review of the aged accounts receivable trial balance indicates that the amount and percentage of accounts receivable in each aging category were comparable to prior year.”	9	If the amounts and percentages of accounts receivable in each category were comparable to prior years, why were the numbers so different? Further, this fact and the fact from number 4 are conflicting.
Fraud Risk-Related Items			
4.	“The percentages used to estimate the uncollectable accounts were almost doubled in practically every aging category in the aged accounts receivable balance.”	9	Even if the percentage doubled, it would not totally explain the triple difference in size of the Bad Debt Expense. The auditor should ask why he received conflicting facts (see number 3).
5.	“There are rumors of a possible takeover by another company.”	9	A larger than usual bad debt expense would tend to make a firm look less attractive as a target, because it lowers net income and vice versa.
6.	“When Office Inc. lost some old customers, the Controller recruited new customers.”	7	Controller is working outside his job description. Because customers do not come through the usual lines, there is a higher probability they are in fact “shell” customers. Customers that “sales” can be recorded for, but who will never pay.
7.	“The Controller is a devoted employee who has not taken a vacation in the last year.”	7	Refusing to take vacations can be a red flag for fraud. A person who is committing a fraud will not want to leave his work for someone else to handle, since they might discover the fraud.
8.	“The Accounting Manager feels overworked and under paid.”	7	Discontent and a feeling of entitlement on a job can be a red flag for an employee who might be susceptible to commit fraud.
9.	“The Controller’s secretary says he has become moody and withdrawn from his associates since his divorce a year ago.”	7	Changes in personality often arise due to the stress of concealing a fraud. This is especially true when the person committing the fraud has not engaged in prior criminal activity.
10.	“The Accounting Manager has two children in college.”	5	The expense of college, especially if to a private school, can be a significant financial pressure.
11.	“Two years prior, Office Inc was audited by the IRS.”	5	A recent audit, especially if a discrepancy was uncovered, is considered a red flag for fraud.
12.	“The market for office equipment has become less competitive in price.”	2	If the market is less competitive, the price per item might have gone up, making each account larger, thus if delinquent accounts were larger, so would their corresponding bad debt expense.
Irrelevant Items			
13.	“Office Inc. has steadily paid down their long term debt.”	0	Irrelevant.
14.	“Office Inc. has changed its accounting for depreciation from the straight-line method to the double-declining balance method.”	0	Irrelevant.
15.	“The controller plays basketball at lunch.”	0	Irrelevant.

Table 2. Initial likelihood assessments that the highlighted area of concern (bad debt expense) is a fraud rather than an error.

Scale: 0 = “not at all likely;” 10 = “extremely likely.”

	a. Audit Novices Mean	b. Experienced Auditors Mean	c. Probability, Difference In Means (Between Subjects)
1. Probability Misstatement due to Fraud	5.23 1.89 s.d. n=18	3.60 1.62 s.d. n=18	(0.013)
2. Probability Misstatement due to Error	4.98 2.06 s.d. n=18	5.13 1.45 s.d. n=18	(0.802)
3. Probability, Difference in Means (Within Subjects)	(0.706)	(0.008)	

Table 3. Participant ratings for facts as to relevance to bad debt expense. By experience type and fact.

Scale: 0 = “not at all relevant;” 10 = extremely relevant.

Item	a. Expert Mean	b. Audit- Novice Mean	c. Experienced Auditor Mean	d. Probability of Difference in Means Novice/ Auditors
Account related items:	9	7.17	6.22	0.289
1. No unexpected increase in sales	9	7.28	8.06	0.424
2. No change in credit granting standards	9	9.27	9.11	0.681
3. Aged A/R comparable year-to-year	9	9.11	9.39	0.565
Fraud-risk environment items:	9	7.17	7.06	0.895
4. % uncollectibles doubled	9	6.28	7.16	0.325
5. Rumors of possible takeover	7	8.33	5.67	0.003*
6. Controller recruits new customers	7	8.11	5.55	0.001*
7. Controller takes no vacations	7	6.89	3.67	0.001*
8. Acct. manager feels overworked	5	5.67	1.67	0.001*
9. Controller moody	5	5.39	3.05	0.001*
10. Acct. manager has 2 kids in college	2	8.05	4.39	0.001*
11. IRS audited firm in past	0	4.77	3.67	0.370
Irrelevant items:	0	4.55	2.33	0.070
13. Firm has paid down long-term debt	0	2.94	0.061	0.019
14. Change in depreciation method				
15. Controller plays basketball at lunch				

*significant at p = 0.010

Table 4. Final likelihood assessments that the highlighted area of concern (bad debt expense) is a fraud rather than an error. By experience type and fraud versus error likelihood.

Scale: 0 = “not at all likely;” 10 = “extremely likely.”

	a. Audit Novices Mean	b. Experienced Auditors Mean	c. Probability, Difference In Means (Between Subjects)
1. Probability Misstatement due to fraud	7.75 1.25 s.d. n=18	5.94 1.66 s.d. n=18	(<0.001)
2. Probability Misstatement due to Error	2.91 1.78 s.d. n=18	5.47 1.78 s.d. n=18	(<0.001)
3. Probability, difference in Means (Within Subjects)	(<0.001)	(0.417)	

Table 5. Revisions to fraud likelihood assessments that a highlighted area of concern is a fraud rather than an error, by experience type and fraud versus error likelihood.

Scale: 0 = “not at all likely”; 10 = “extremely likely”

	a. Audit Novices Mean	b. Experienced-Auditors Mean	c. Probability, Difference in Means (Between Subjects)
1. Actual Revision to Probability of Fraud Assessment	2.51* 1.28 s.d. n=18	2.25* 2.00 s.d. n=18	(0.320)
2. Possible Revision to Probability of Fraud Assessment (due to scale limitations)	4.76* 1.89 s.d. n=18	6.31* 1.62 s.d. n=18	(0.006)
3. Percentage of Possible Revision to Probability of Fraud Assessment (row 1 ÷ row 2)	53.4% 0.15 s.d. n=18	33.3% 0.25 s.d. n=18	(0.004)

*significantly different than zero at $p < 0.001$.

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