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# The Effects of Familiarity with the Preparer and Task Complexity on the Effectiveness of the Audit Review Process

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**ABSTRACT:** A review of preparers' workpapers can lead to the detection of "classification" errors (i.e., incorrect determinations with respect to sampled audit items) and/or "conclusion" errors (i.e., incorrect conclusions about populations of audited items). We examined the effects of familiarity with the preparer and task complexity on reviewers' effectiveness at detecting these errors. The results indicate that reviewers of unfamiliar preparers reperform more of the preparers' work but do not detect more classification errors. Preparer familiarity and task complexity interactively determined effectiveness at detecting conclusion errors: when the task was complex, reviewers of familiar preparers detected more conclusion errors than reviewers of unfamiliar preparers. However, performance did not differ on the routine task. Furthermore, reviewers of familiar preparers were more effective on the complex relative to routine task, but the reverse result was true for reviewers of unfamiliar preparers.

**Key Words:** *Familiarity, Task complexity, Time pressure, Review effectiveness.*

**Data Availability:** *Contact the authors.*

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## I. INTRODUCTION

Public accounting firms rely on the review process to detect and correct any biases or errors in judgments and decisions made by inexperienced auditors (Bamber 1983; Solomon 1987; AICPA 1992, AU 311.13; Libby and Trotman 1993). Although various studies have demonstrated the benefits of the review process (e.g., Trotman 1985; Trotman and Yetton 1985; Ramsay 1994), little is known about how contextual variations affect the realization of these benefits. Prior research has shown that decision makers are adaptive and evoke different

The perspective adopted in this paper is that an audit review consists of orientation and strategic phases (Bacsik and Rizzo 1983; Label and Arens 1984; Bamber et al. 1988). The orientation phase, which is used for set-up work and reperformance, can result in the detection of classification errors.<sup>3</sup> Classification errors are preparers' incorrect determinations with respect to sampled audit items. The strategic phase is used to evaluate the preparer's conclusions and can result in the detection of conclusion errors, which are preparers' incorrect conclusions about a population of audited items.

With respect to the orientation phase, we hypothesized that reviewers who are more familiar with a preparer will reperform less of the preparer's work and, thus, detect fewer classification errors. Relevant to the strategic phase, we hypothesized that familiarity with the preparer and task complexity will interactively determine conclusion effectiveness. Specifically, when the task is complex, we expected reviewers of familiar preparers to detect more conclusion errors than reviewers of unfamiliar preparers. However, we did not expect performance differences on the routine task. Further, reviewers of familiar preparers were expected to be more effective on the complex relative to routine task, but the reverse result was expected for reviewers of unfamiliar preparers.

To examine these issues, in-charge auditors were asked to review workpapers previously prepared by staff auditors. Familiarity with the preparer and task complexity were fully crossed in a between-subjects design. The workpapers contained actual preparer-errors and, therefore, review effectiveness could be evaluated.

The results were generally consistent with our expectations. First, reviewers reperformed more of the work of unfamiliar preparers relative to familiar preparers, in spite of the fact that there was no difference in the quality of the workpapers. The increased reperformance, however, did not translate to greater detection of classification errors. Second, familiarity with the preparer and task complexity interacted to influence the detection of conclusion errors. Reviewers of familiar preparers were more effective than reviewers of unfamiliar preparers on the review of a complex task. Also, reviewers of familiar preparers were more effective on the complex relative to the routine task but reviewers of unfamiliar preparers were more effective on the routine compared to the complex task.

We draw two main conclusions from the results. First, in the review of routine tasks, familiarity with the preparer can engender overconfidence and impair reviewers' effectiveness at detecting preparers' conclusion errors. Second, lack of familiarity with the preparer can induce additional skepticism, increase the level of reperformance and, under a fixed time budget, impair reviewers' effectiveness at detecting preparers' conclusion errors. From a review enhancement perspective, the results suggest different mechanisms. Reviewers who are familiar with preparers may need supplemental incentives, aimed at curbing overconfidence, when they review routine tasks. Reviewers who are unfamiliar with preparers may need flexible time budgets to compensate for the additional time used for reperformance.

The next section contains a review of the literature and presents the research hypotheses. The subsequent two sections describe the method and the results of the study, respectively. The final section is devoted to the discussion of the findings and their implications.

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<sup>3</sup> As a point of reference, consider audit program execution which is the typical task assigned to staff auditors and reviewed by audit seniors. For this task, preparers execute a number of distinct acts, including: (a) making determinations about (or being provided with) audit procedures and sample sizes; (b) obtaining a sample of transactions from the client's files; (c) auditing the sampled items and noting any exceptions, and (d) drawing conclusions about the population of audited items. Set-up work includes evaluating the adequacy of the audit procedures and sample sizes. Reperformance primarily entails examining preparers' reported exceptions, and to a lesser extent, the client's source documents.

## II. LITERATURE REVIEW AND RESEARCH HYPOTHESES

### Overview of the Review Process

The review process is an essential element of audit firms' quality control programs and is mandated by authoritative standards (Solomon 1987; AICPA 1992). More experienced auditors review and comment on the completed audit activities of less experienced auditors, typically through written communication (Solomon 1987). The review process is conducted, throughout the audit, in a hierarchical and iterative fashion. Particularly, at the first level of review, that between audit staff and seniors, the review can be decomposed into an orientation and a strategic phase (Label and Arens 1984; Bamber et al. 1988).

In the orientation phase, the reviewer basically performs pre-review activities. These include "set-up work" and "reperformance" of the preparer's work. Set-up work includes evaluating the adequacy of the audit procedures and sample sizes, and reperformance includes re-examining relevant client source documents and preparer reported exceptions (Bamber et al. 1988).<sup>4</sup> In many respects, the orientation is little more than a duplication of a subset of the preparer's work and is somewhat mechanical (Ramsay 1994). Reviewers generally spend little review time on the orientation phase, but the reviewer's degree of skepticism or the perceived reliability of the preparer will dictate the extent of work required in the orientation phase (Bacsik and Rizzo 1983). Reperformance leads to the detection of classification errors which occur when the preparer classifies a sampled audit item as being correct when it is an error or classifies a correct item as an error.

In the strategic phase, the reviewer directs attention to the preparer's conclusions. For instance, do the sample results support the conclusions? Is there enough documentation to justify the conclusions? This phase of the review is aimed at challenging the approach and results of the preparer's workpapers and is therefore conceptual (Ramsay 1994). In effect, it requires the reviewer to make an independent determination as to whether the evidence gathered by the preparer supports the preparer's conclusions (Bacsik and Rizzo 1983; Libby and Trotman 1993). A conclusion error occurs when the preparer accepts a population of audited items when it should be rejected or incorrectly rejects an acceptable audit population. The detection of conclusion errors leads to a direct improvement in audit quality.

Like most audit activities, reviews are also typically conducted under time pressure and are, therefore, subject to effectiveness losses (McDaniel 1990; Solomon and Brown 1992). Given a fixed time budget, there is a trade-off between the orientation phase and strategic phase. The more time the reviewer spends on the former, the less time is available for the latter, and the greater the likelihood of failing to detect conclusion errors. As such, the allocation of review effort between the two phases would likely be a determinant of review efficacy. We discuss below how familiarity with the preparer and task complexity can affect the allocation of effort between the two phases.

### Orientation Phase

#### *The Effect of Familiarity with the Preparer*

The audit team is a hierarchical unit of auditors at various functional levels working on a well-defined assignment (Anderson 1977). The team may have a short or a long life depending on the

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<sup>4</sup> Set-up work is a necessary precursor to reperformance. For instance, the reviewer must be satisfied with the adequacy of the audit procedures prior to reperforming the preparer's work. As will be discussed, the extent of set-up work depends on the guidance provided to the preparer (i.e., complexity or structure of the audit program).

staffing strategy employed by the firm (Watson 1975). One staffing approach builds an audit team which works together on several engagements. This team typically has a longer life; members have worked together on more than one engagement and have become very familiar with one another. An alternative staffing strategy requires a centralized personnel department to assign staff auditors to various engagements on a need basis. The staff auditor is a member of that team for a specific engagement and the team is dissolved upon completion of that engagement.<sup>5</sup> The alternative staffing approaches are analogous to the distinction between “ad hoc” and “practiced” teams, respectively (Libby et al. 1987; Solomon 1987). Three lines of research are relevant to considering the effect of reviewers’ familiarity with the preparer.

The literature on small group decision making suggests that working together for long periods of time leads to “groupthink,” a term used by Janis (1972) to describe a deterioration in decision-making effectiveness for groups who work together on a continuing basis. That is, working together on a continuing basis tends to discourage skepticism as group members develop a tendency to rationalize members’ decisions rather than consider alternative courses of action (Janis 1972; Courtright 1978). Subsequent controlled experiments in psychology have produced mixed results (for supporting studies, see Courtright 1978; Callaway and Esser 1984; Leana 1985; for non-supporting studies, see Flowers 1977; McCauley 1989; Tetlock et al. 1992; Aldag and Fuller 1993). The demands of the decision task appear to be the best discriminator between groupthink and non-groupthink groups (Aldag and Fuller 1993).<sup>6</sup>

The performance appraisal literature suggests that the characteristics of both the raters and ratees affect the appraisal process (for reviews, see Landy and Farr 1980; Ilgen and Barnes-Farrell 1993). For instance, research suggests that ratees with whom raters had established relatively high personal acquaintance are evaluated more favorably than other ratees (Kingstrom and Mainstone 1985; Blodgett et al. 1987; Zalesny 1990; Martell and Willis 1993).<sup>7</sup> These results suggest that familiarity with the ratee increases the ratee’s credibility and the rater’s confidence in the ratee’s work.

In auditing, Plumlee (1985) found that internal auditors who evaluated systems they helped design were less likely to identify control weaknesses relative to auditors not familiar with the

**H2:** Reviewers who are more familiar with the preparer detect fewer improperly classified audited items.

### ***The Effect of Task Complexity***

Following Campbell (1988), we define a complex task as one which places high cognitive demands on the decisionmaker. The increase in cognitive demands may derive from either task difficulty or task structure (Bonner 1994). Task structure, the focus of this paper, tends to decrease task complexity by reducing the number of distinct acts that must be executed and the number of cues that must be processed in the performance of those acts (Wood 1986; Payne et al. 1988).<sup>8</sup>

For instance, consider audit program execution which is the typical task assigned to staff and whose results are reviewed by seniors. The audit program may be provided to staff, detailing instructions on the exact procedures to perform and specifying the appropriate sample sizes to achieve the desired level of assurance. Alternatively, the program may specify only the audit objectives and the desired level of assurance, leaving the procedures to perform and sample size decisions to the staff auditor's judgment. The program with the complete guidance or specification is less complex to execute or to review since it eliminates some of the judgments needed to complete the task (Cushing and Loebbecke 1986; Wood 1986; McDaniel 1990; Bonner 1994).

Several studies have shown that variations in task complexity are associated with shifts in information-processing strategies (Olshavsky 1979; Payne 1982; Payne et al. 1988, 1990). For instance, task complexity has been shown to increase the level of cognitive effort invested (Kukla 1974; Gitomer et al. 1987; Foos 1992) or the amount of time allocated to developing a plan for the task (Weingart 1992). Less consistent, however, is the effect of task complexity on performance.

Some research has shown a direct positive effect of task complexity on performance (e.g., Campbell and Illgen 1976; Paquette and Kida 1988). However, the preponderance of the research evidence indicates that the task complexity-performance relationship is moderated by the level of preexisting task demands (Shapira 1989). For instance, the positive benefits of task complexity on performance have been reversed by low goal commitment (Martin and Manning 1995), time pressure (Payne et al. 1990), inexperience (Kukla 1974; Abdolmohammadi and Wright 1987) and the presence of incentives, feedback or a justification requirement (Ashton 1990). These results suggest that task complexity tends to increase cognitive effort (focused attention and prolonged deliberation), time spent on the task and decision performance. However, the positive benefits of task complexity on performance can be reversed by the presence of other task demands, such as accountability and time pressure.

In the review setting, task complexity will likely have two effects on the allocation of effort. First, when the underlying task is complex, the review process itself has more steps thus requiring more processing time of the reviewers. Second, professional auditing standards state that review effort should be sensitive to the complexity of the *preparer's* task (AICPA 1992, AU 311.11). Thus, task complexity is expected to increase the time spent on set-up work and the cognitive effort invested on the review task.

Specifically, when the task is complex, the reviewer will need to evaluate the adequacy of the selected procedures and sample sizes (i.e., there is an increase in set-up work). Whether the audit

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<sup>8</sup> As described in the method section, task complexity was operationalized by varying the degree of the preparer's task structure, which in turn varied the number of judgments and decisions that the reviewers had to evaluate. We use the more general construct, *task complexity*, while acknowledging that task complexity has other dimensions (see Wood 1986; Campbell 1988; Bonner 1994).

procedures are selected by or provided to the preparer, should not, however, affect the reviewer's perception of the preparer's ability to execute a set of audit procedures. Thus, task complexity should affect the effort exerted in evaluating the audit procedures and sample sizes, but should not differentially affect the reviewer's level of reperformance or the detection of classification errors.<sup>9</sup> Further, the increased cognitive effort can carry over to the strategic phase and, depending on how much time has been allocated to reperformance, via familiarity effects, enhance conclusion effectiveness (cf. Abdolmohammadi and Wright 1987; Ashton 1990; Payne et al. 1990; Martin and Manning 1995).

### **Strategic Phase: The Effect of Familiarity with the Preparer and Task Complexity**

As previously discussed, a higher review effort is expected in the orientation phase when the

preparer is unfamiliar (via higher reperformance) or the task is more complex (via increased set-up work). However, for a given time budget, when orientation review effort increases, less time is available for the strategic phase. The result is decreased review time and review effectiveness with respect to detecting conclusion errors. These propositions suggest a possible interaction between task complexity and familiarity with the preparer.

### ***Between-Familiarity Comparisons***

When both preparer unfamiliarity and task complexity exert demands on time in the orientation phase, there is considerably less time available in the strategic phase. That is, lack of familiarity with the preparer exerts a greater proportion of time pressure (via higher reperformance)



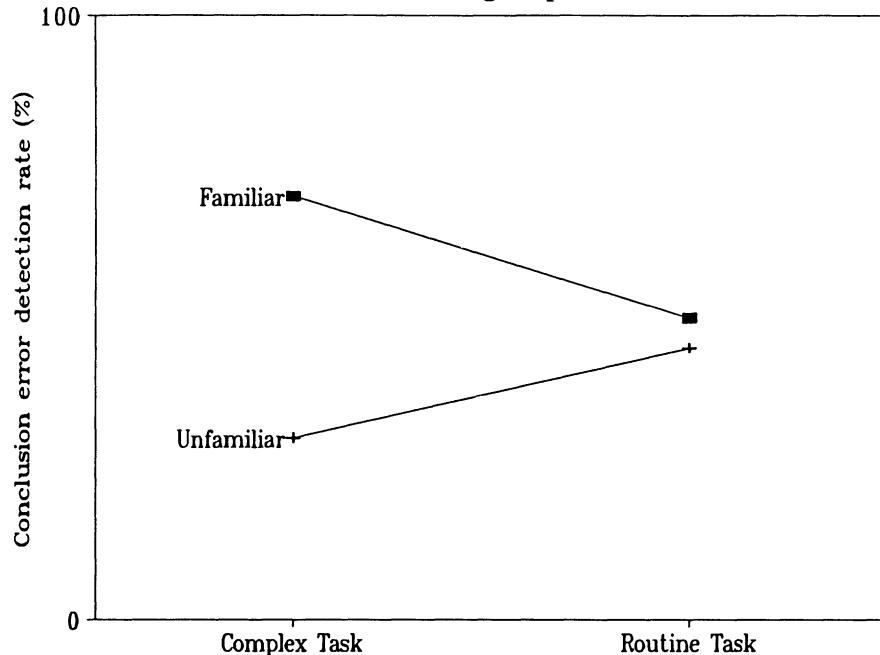
the complex task are expected to focus more attention and prolong deliberations, the positive benefits of task complexity on performance should be realized.

Finally, we expect reviewers who are unfamiliar with the preparer to detect more errors on a routine task compared to a complex task. That is, reviewers are expected to spend considerably more time on the orientation phase of a complex task (via reperformance and set-up work) relative to the routine task. The excessive time pressure does not allow the reviewer to realize the potential benefits of task complexity. That is, excessive time pressure, induced by both preparer unfamiliarity and task complexity in the orientation phase, hinders reviewers' ability to reap the benefits of task complexity in the strategic phase. Thus, an ordinal interaction between familiarity and task complexity on review effectiveness is expected. This hypothesized interaction is depicted in figure 1.

**H3:** Familiarity with the preparer and task complexity interact to influence the detection of preparers' conclusion errors. The interaction has the following attributes:

- (a) For a complex task, reviewers who are familiar with the preparer detect more conclusion errors than reviewers who are unfamiliar with the preparer. However, no significant performance differences are expected on the review of a routine task.
- (b) Reviewers who are familiar with the preparer detect more conclusion errors on a complex task relative to a routine task.
- (c) Reviewers who are unfamiliar with the preparer detect more conclusion errors on a routine task relative to a complex task.

**FIGURE 1**  
**Hypothesized Effects of Familiarity with the Preparer and Task Complexity on Reviewers' Effectiveness at Detecting Preparers' Conclusion Errors**



### III. METHOD

#### Participants and Demographics

Participants were 162 auditors from a single Big 6 accounting firm.<sup>10</sup> The auditors had a mean of 3.2 years of experience and had spent an average of 32 percent of their time in the current year actually reviewing preparers' workpapers.

#### Design

Two variables, each at two levels, were manipulated between-subjects. The manipulated variables were the degree to which the reviewer was familiar with the preparer and the level of task complexity. In addition to the two main independent variables, three cases were nested within each level of the task complexity treatment. Auditors were randomly assigned to one of the twelve experimental conditions.

#### Task and Procedures

Each experimental session commenced with an introduction of one of the researchers (an assistant in one administration) by an attending partner. To improve auditors' motivation, the partner discussed the importance of the project to the firm and elicited their cooperation. The researcher or the assistant discussed the nature of the task, distributed the experimental materials and informed the auditors they had 25 minutes to complete their review work. The time budget was set based on pilot tests to stimulate a moderate level of time pressure.<sup>11</sup>

Participants were asked to assume that they were the in-charge auditors in a recurring engagement and were instructed to review the audit work pertaining to a partial year-end inventory audit program. The program's foci were the valuation and completeness objectives for both the inventory and inventory reserve accounts. The audit work was previously performed and documented by second-year staff auditors (the preparers). The participants were told that the preparer had been provided with the finished goods inventory and related inventory reserve records for the client, had examined those documents for valuation and completeness errors, and had documented and summarized their findings.<sup>12</sup>

For the current task, each reviewer was provided with a packet of information containing: (1) background information about the client; (2) information about the preparer; (3) the original audit

instructions and audit programs provided to the preparers; (4) a summary of the audit work performed and the conclusions reached by the preparer. The summary was supported by the original workpapers which documented all the audit work performed; (5) review response sheets.

The background information described the client as a wholesale distributor of school supplies which stocks about 25 products and distributed them to 60 universities. Each university was identified by a unique three number logo. The reviewers were to assume that this was the fourth year their firm had conducted the audit for the client.

After the background information, the reviewers then examined the information about the staff auditor, who was described as familiar or unfamiliar. At this point, the reviewers were asked

<sup>10</sup>One hundred twenty-six auditors were attending one of two advanced in-charge staff schools. At subsequent administrations, an additional 36 auditors participated in a staff school or one of three office visits.

<sup>11</sup>A time budget was imposed to ensure task realism. Pilot subjects noted that the task would not be realistic if there was no time pressure. That is, without time pressure, auditors might redo all of the preparer's work.

<sup>12</sup>The preparers had audited the inventory and inventory reserve records of a client for valuation and completeness errors (see McDaniel 1990). The inventory and inventory reserve records were seeded with errors, as such, the preparers' workpapers contained known errors. Review effectiveness was evaluated with respect to the detection of these preparer errors.

to rate on a scale of zero (Not Familiar) to 100 (Highly Familiar) how familiar they would be with the staff auditor's work given the current staffing situation. The rating was obtained at this point to enhance the salience of the familiarity manipulation.<sup>13</sup>

The participants then examined the audit instructions to the preparers. The instructions included the client's inventory policies and audit program. Each participant received either the instructions that were relevant to the complex or the routine program.

The information following next in the reviewer's packet was the preparer's "summary of the audit work performed and conclusions reached" and the original workpapers. The summary detailed the audit work completed by the preparer for each objective, the sample size reportedly selected, the number of exceptions found (i.e., each sampled audit item was classified as being in error or not), and whether the preparer accepted or rejected the "population" for the given objective. The original workpapers documented the preparer's work which was the support for the summary and conclusions. The audit work was documented directly on the client's inventory and inventory reserve records (consisting of 30 pages of 1500 inventory items and five pages of 150 reserve items) using a pre-specified tick-mark legend. Thus, in assessing the accuracy and completeness of the preparer's work, the reviewer could refer to the original workpapers to examine the preparer's noted exceptions (an orientation review) or could examine the conclusions (a strategic review).

Finally, the packet contained response sheets on which the reviewer documented his or her review comments regarding the preparer's work. Each review response sheet consisted of questions about each of the four objectives (inventory valuation, inventory completeness, inventory reserve valuation and inventory reserve completeness). The questions pertained to the extent of reperformance ("What percentage of the staff auditor's work did you reperform?"), the accuracy of the preparer's work ("Did the staff auditor correctly classify the sampled items as being in error or not in error?"), and the appropriateness of the conclusions ("Are you satisfied that the conclusions reached by the staff auditor are supported by documented evidence?"). Thus, for reperformance, reviewers' responses could range from zero to 100 and for classification/conclusion accuracy, reviewers provided a "yes" or "no" response. After completing the review, the auditor then responded to demographic questions. In addition, the auditors rated how confident they were in (1) the preparer's work and (2) their own review work on a scale of zero (not confident) to 100 (highly confident).

### **Manipulations**

Familiarity with the preparer was manipulated by asking reviewers to assume that the preparer was either from another office and unknown to them (low familiarity) or that they were familiar with the preparer (high familiarity). Reviewers in the unfamiliar condition were also told that inter-office use of staff is routine in the firm. The familiarity manipulation is shown in the appendix.

Task complexity was manipulated by varying the amount of guidance provided to the preparers and, therefore, the number of distinct acts that had to be executed by the reviewers (Wood 1986). In the routine condition, reviewers examined workpapers prepared from a structured audit program that listed the required audit *procedures* and statistically-correct sample sizes for each of four audit objectives. In the complex condition, reviewers examined workpapers prepared from an unstructured audit program. This audit program listed only the audit *objectives*

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<sup>13</sup>The cost of obtaining the familiarity rating prior to the review taking place was the potential for a demand effect. However, there appeared to be no empirical basis for concerns about demand effects in audit studies (see Schepanski et al. 1992).

and required the preparer to select judgmentally the appropriate audit procedures and sample sizes for a given level of assurance. Reviewing the latter program is more complex since it required the additional steps of evaluating the appropriateness of the selected audit procedures and sample sizes.

### Case Development

Case development was guided by three objectives: (a) the materials to be reviewed had to contain known errors committed by real preparers (to reduce the risk of seeding an unrealistic pattern of errors); (b) the error profiles in the routine and complex conditions had to closely parallel each other to preserve internal validity; (c) multiple cases had to be used to reflect various error profiles. With these objectives in mind, we selected six preparer-cases from the preparers' workpapers in the McDaniel (1990) experiment. These preparers had been given (routine condition) or had selected (complex condition) audit procedures and sample sizes, sampled from a population of inventory transactions, and had drawn conclusions for each of four inventory audit objectives. Thus, the preparer-cases could vary by audit procedures and sample sizes, as well as the number and type (type I vs. type II errors and the audit objective in error) of classification and conclusion errors.

We reviewed 90 preparer-cases in the routine condition of McDaniel (1990) and selected three cases, each of which could be matched with a parallel case selected from a review of the 89 cases in the complex condition. The matched case pairs were identical in all respects except the number of conclusion errors in two case pairs.<sup>14</sup> Specifically, the case pairs were matched with respect to audit procedures, sample sizes and the audit objectives in which errors occurred. The conclusion errors, in all six cases, were instances when the preparer had incorrectly accepted a misstated population. For the routine condition (the "R" cases), both case R1 and R3 had two conclusion errors. The matched complex cases (the "C" cases), C1 and C3 had three and one conclusion errors, respectively. These cases, however, were matched on the number of classification errors (two for cases 1 and zero for cases 3). Cases R2 and C2 had the same number of classification errors (one) and conclusion errors (three). Thus, the selected cases had an equal number of classification and conclusion errors across the two complexity conditions.

## IV. RESULTS

### Manipulation Checks

The task complexity assessment was made by preparers in an earlier experiment (McDaniel 1990). The complex program was rated as more complex ( $t = 2.03, p \leq 0.04$ ) and providing less guidance ( $t = 8.40, p \leq 0.001$ ) than programs typically utilized by them in practice (see McDaniel 1990). Twelve pilot reviewers for this experiment unanimously confirmed that the routine program should require few judgments prior to implementation by the preparer. Similarly, they confirmed that preparers of the complex program would have to process more cues and make more judgments which, in turn, would increase the number of steps and judgments that reviewers had to evaluate.

Auditors assigned to the familiarity condition reported a higher mean (standard deviation) familiarity rating of 78.28 (15.1) compared to 51.71 (29.7) for the unfamiliar group ( $t = 7.15, p \leq 0.001$ ). In addition, the means (standard deviations) of reviewers' confidence ratings in the

<sup>14</sup>An identical matching (on the number of conclusion errors) for the three case pairs would have caused mismatches in two or more other matched attributes. That is, the three selected case pairs minimized the number of mismatched attributes.

preparers' work for the familiar and unfamiliar groups were 61.20 (19.4) and 51.41 (21.1), respectively, and the difference was statistically significant ( $t = 2.96, p \leq 0.004$ ). *Self-confidence* ratings between the two familiarity conditions were not significantly different ( $t = 1.24, p \leq 0.217$ ), indicating that the reviewers' assessment of their own abilities did not influence their confidence assessment in the preparers' work.<sup>15</sup> Thus, the manipulations of both familiarity and task complexity were successful.

We also examined the possibility of a confound in the manipulation of familiarity and competence by asking the 36 auditors (in the subsequent administration) to evaluate the competence of the preparer on a 101-point scale.<sup>16</sup> For all subjects, the mean (standard deviation) competence rating of the preparer described as familiar (FP) and unfamiliar (UP) was 75.56 (13.62) and 73.28 (12.13), respectively. For reviewers who evaluated an FP followed by a UP ( $n=22$ ), the mean (standard deviation) competence rating for the FP was 77.50 (12.22) and that of the UP was 75.14 (11.91). For reviewers who evaluated a UP followed by an FP ( $n=14$ ), the mean (standard deviation) competence rating for the UP was 70.36 (12.32) and that of the FP was 72.50 (15.54).

The results of an ANOVA, with competence rating as a dependent variable and familiarity and order of response as independent variables, did not support the confound hypothesis (familiarity,  $F = 2.48, p \leq 0.120$ ; order of response,  $F = 0.00, p \leq 0.972$ ; interaction,  $F = 0.53, p \leq 0.471$ ). The results of a two sample  $t$ -test that compared the first competence ratings (i.e., comparing the "familiar" competence ratings of subjects in the FP/UP order to the "unfamiliar" competence ratings of the subjects in the UP/FP order) were also not consistent with the confound hypothesis ( $t = 1.70; p \leq 0.098$ ). Finally, employing paired tests, competence was marginally significant for subjects in the familiar condition (*paired*  $t = 1.85, p \leq 0.078$ ) and not significantly different for subjects in the unfamiliar condition (*paired*  $t = 1.03, p \leq 0.321$ ). Thus, employing miscellaneous tests that minimized power problems (the ANOVA test which included all the available data) and potential carryover problems (the two sample  $t$ -test), we were not able to find credible support for a confound of familiarity and competence. We concluded that familiarity and competence are separable concepts which were not confounded in our study.

### Hypotheses Tests

H1 predicts that familiarity with the preparer would lead reviewers to reperform less of the preparer's audit work. Descriptive statistics on overall self-reported reperformance rates, for all experimental conditions, are presented in panel A of table 1.<sup>17</sup> On average, reviewers in the familiar condition reperformed 14 percent compared to 21 percent in the unfamiliar condition.<sup>18</sup> For the routine cases, the mean reperformance rate in the familiar condition was 11 percent

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<sup>15</sup>There was a positive correlation (0.237) between familiarity with the preparer and the reviewer's confidence rating in the preparer's work. The test for non-zero correlation between groups was significant (Cochran-Mantel-Haenszel statistic = 8.34,  $p \leq 0.004$ ).

<sup>16</sup>Each reviewer made two competence evaluations. The first evaluation was made after the familiarity rating. Therefore, subjects in the familiar (unfamiliar) condition rated the competence of the preparer who was described as familiar (unfamiliar). The second evaluation was made after completing the main experiment. Subjects made the second competence ratings assuming the alternative staffing situation. In effect, subjects provided competence ratings based on both staffing situations (i.e., the comparisons were made within-subjects).

<sup>17</sup>The reported rates are the mean reperformance rates across the four audit objectives. Since the test of H1 controls for the effects of task complexity and case, descriptive data on these variables are also presented.

<sup>18</sup>The average reperformance rate was only 17 percent. Even though overall reperformance rates were low, differences in the level of reperformance could significantly affect time resources. For instance, consider a reviewer who spends an additional minute on each objective. Across objectives, this reviewer would spend an additional four minutes which is 16 percent of the total review time.

**TABLE 1**  
**Effects of Familiarity with the Preparer on the Orientation Phase**  
**(Auditors' Level of Reperformance and Detection of Classification Errors)**

*Panel A: Number of Auditors, Total Classification Errors, Mean Percent Reperformance and Classification Error Detection Rate By Familiarity, Task Complexity and Case*

		Routine Cases				Complex Cases			
		R1	R2	R3	Total <sup>a</sup>	C1	C2	C3	Total
<i>Familiar</i>	n	14	13	14	41	14	13	14	41
	Total errors	28	13	NA	41	28	13	NA	41
	Reperformance	12%	13%	9%	11%	12%	16%	23%	17%
	Detection Rate	14%	38%	NA	22%	14%	69%	NA	32%
<i>Unfamiliar</i>	n	14	13	14	41	13	13	14	41
	Total Errors	28	13	NA	41	26	13	NA	39
	Reperformance	19%	21%	20%	20%	13%	16%	35%	21%
	Detection Rate	7%	46%	NA	20%	35%	54%	NA	41%

<sup>a</sup> Total errors are the number of errors per case multiplied by the number of auditors. Cases R3 and C3 had no classification errors.

*Panel B: Analysis of Variance for Familiarity and Task Complexity on Auditors' Level of Reperformance (Controlling for Case)*

Source	df	F	p-value
Familiarity	1	8.06	0.005
Complexity	1	0.34	0.559
Familiarity × Complexity	1	0.09	0.767
Case (Complex)	2	6.63	0.002
Familiarity × Case (Complex)	2	0.31	0.734

*Panel C: Categorical Model for Familiarity and Task Complexity on Auditors' Detection of Classification Errors*

Source	df	$\chi^2$	p-value
Familiarity	1	0.00	0.979
Complexity	1	4.77	0.029
Familiarity × Complexity	1	0.35	0.553
Case (Complex)	2	19.68	0.001
Familiarity × Case (Complex)	2	3.71	0.156

compared to 20 percent for those in the unfamiliar condition. For the complex cases, the rate in the familiar condition was 17 percent compared to 21 percent for the unfamiliar condition.

H1 was tested with an analysis of variance (ANOVA) that used the log transform of overall reperformance rates as the dependent variable.<sup>19</sup> Familiarity with the preparer was the independent variable of interest. Task complexity, case (complexity) and the interaction of familiarity and case (complexity) were included as control variables (see Kirk 1993).<sup>20</sup> As indicated in panel B of table 1, neither task complexity ( $F = 0.34, p \leq 0.559$ ) nor the interaction terms (familiarity  $\times$  task complexity ( $F = 0.09, p \leq 0.767$ ) and case (complexity)  $\times$  familiarity ( $F = 0.31, p \leq 0.734$ )) were significant. Controlling for the effect of case ( $F = 6.63, p \leq 0.002$ ), there was a significant effect for familiarity ( $F = 8.06, p \leq 0.005$ ).<sup>21</sup> Additionally, the correlation between the reviewers' familiarity rating and overall reperformance rate was  $-0.276$  ( $p \leq 0.001$ ) indicating that the more familiar the reviewer was with the preparer the lower the reperformance rate. Thus, H1 was supported.<sup>22</sup>

It was hypothesized that reviewers who were more familiar with the preparer would detect fewer improperly classified audited items (H2). On average, reviewers detected 28 percent (46 of 162) of the preparers' classification errors. Twenty-seven percent (22 of 82) of the classification errors were detected by reviewers in the familiar condition compared to 30 percent (24 of 80) in the unfamiliar condition. Descriptive statistics on classification errors are also presented in panel A of table 1. For the routine cases, auditors in the familiar condition detected 22 percent classification errors compared to 20 percent for those in the unfamiliar condition. For the complex cases, auditors in the familiar condition detected 32 percent of the classification errors compared to 41 percent by those in the unfamiliar condition.

H2 was tested with a categorical model (CATMOD) that used classification error detection rate as the dependent variable. Independent and control variables were identical to those used to test H1. The results, presented in panel C of table 1, indicated significant effects for task complexity ( $\chi^2 = 4.77, p \leq 0.029$ ), case (complexity) ( $\chi^2 = 19.68, p \leq 0.001$ ) and non-significant effects for the interaction terms: familiarity  $\times$  task complexity ( $\chi^2 = 0.35, p \leq 0.553$ ); case (complexity)  $\times$  familiarity ( $\chi^2 = 3.71, p \leq 0.156$ ). Contrary to expectations, familiarity with the

<sup>19</sup>Reperformance rates were skewed and not normally distributed, therefore, while mean percentages are reported for relative comparisons, the hypothesis testing employs their logarithmic transform (Kirk 1993). ANOVA was used to test H1 because reperformance rates were expressed in percentages. On the other hand, because the dependent variables for the test of H2 and H3 are dichotomous (error detected versus error not detected), a categorical model was used to test those hypotheses.

<sup>20</sup>Case (complexity) means that the case variable is nested within the task complexity treatment. As an alternative analysis, we blocked on the case variable and tested the hypothesis (as well as H2 and H3) with a  $2 \times 2 \times 3$  analysis. The results from this analysis were similar to those reported. For the alternative as well as the reported analyses, we also included an indicator variable that discriminated between the data sets from the initial and subsequent administrations (see footnote 10). This indicator variable was not significant as a main or interaction effect.

<sup>21</sup>With respect to the case variable, Duncan multiple range test ( $p \leq 0.05$ ) indicated a difference between case 1 and case 3 only. Cases 1 and 3 differed in the number of classification errors, however, since auditors did not know this *a priori*, it is unlikely that this led to the difference. We explored other possible causes of the difference (e.g., confidence ratings, total and review experience), but could not arrive at a satisfactory explanation. However, as can be gleaned from panel A of table 1, the basic pattern of higher reperformance by reviewers in the unfamiliar condition held across all cases.

<sup>22</sup>Since the four audit objectives varied in terms of inherent risk, it was possible that levels of reperformance would also vary by objective. To examine this possibility, we also examined the mean percent reperformance by audit objective. For three of the four objectives, reperformance rates were significantly higher for the unfamiliar group relative to the familiar group, as hypothesized. Specifically, the unfamiliar group reperfomed more of the preparers' work for inventory valuation ( $Z = 2.45, p \leq 0.015$ ), inventory completeness ( $Z = 3.24, p \leq 0.001$ ) and inventory reserve completeness ( $Z = 3.84, p \leq 0.001$ ), respectively. The difference in reperformance for the reserve valuation objective was also in the expected direction and marginally significant ( $Z = 1.81, p \leq 0.071$ ). Conversely, since an accurate conclusion was required for each audit objective, we did not expect nor did we find reviewers' conclusion effectiveness to vary by objective. As such, no further analyses by objective were reported.

preparer did not affect reviewers' classification error detection rate ( $\chi^2 = 0.00, p \leq 0.979$ ). Thus, H2 was not supported.



**TABLE 2**  
**Effects of Familiarity with the Preparer and Task Complexity on the Strategic Phase**  
**(Auditors' Detection of Conclusion Errors)**

*Panel A: Number of Auditors, Total Conclusion Errors and Conclusion Error Detection Rate By Familiarity, Task Complexity and Case*

		<i>Routine Cases</i>				<i>Complex Cases</i>			
		<i>R1</i>	<i>R2</i>	<i>R3</i>	<i>Total</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>Total</i>
<i>Familiar</i>	n	14	13	14	41	14	13	14	41
	Total Errors	28	39	28	95	42	39	14	95
	Detection Rate	50%	54%	54%	53%	74%	74%	71%	74%
<i>Unfamiliar</i>	n	14	13	13	40	13	13	14	40
	Total Errors	28	39	26	93	39	39	14	92
	Detection Rate	54%	56%	62%	57%	41%	46%	29%	41%

*Panel B: Frequency of Preparer Conclusion Errors Detected by Reviewers*

<i>Condition</i>	<i>Not Detected</i>	<i>Detected</i>	<i>Total</i>
Overall	164	211 (56%)	375
Familiar	70	120 (63%)	190
Unfamiliar	94	91 (49%)	185
Routine	85	103 (55%)	188
Complex	79	108 (58%)	187

*Panel C: Categorical Model for Familiarity and Task Complexity on Auditors' Detection of Conclusion Errors*

<i>Source</i>	<i>df</i>	$\chi^2$	<i>p-value</i>
Familiarity	1	7.64	0.006
Complexity	1	0.09	0.767
Familiarity $\times$ Complexity	1	12.83	0.001
Case (Complexity)	4	1.26	0.868
Familiarity $\times$ Case (Complexity)	4	0.51	0.973

#### **Analysis of Simple Effects**

##### *Familiar vs. Unfamiliar*

on the routine task	1	0.41	0.521
on the complex task	1	16.97	0.001

##### *Routine vs. Complex*

by familiar	1	7.42	0.007
by unfamiliar	1	5.48	0.019

if time had permitted. The finding that reviewers reperformed only a minor portion of the preparers' work was consistent with Bamber et al. (1988). Reviewers did not consider duplicating a significant portion of the preparer's work to be a critical aspect of the review process. We also found, as expected, that the extent of reperformance was not related to task complexity.

Second, reviewers were less confident in the work of unfamiliar preparers and reperformed more of their work relative to the work of familiar preparers. However, the increased reperformance did not translate to greater detection of classification errors. Manipulation checks suggested that the decreased confidence was not attributable to the perceived competence of the preparer. This was evidence that lack of familiarity can engender additional skepticism in the orientation phase (even when competence of the preparer is held constant). To the extent that the review should focus on the strategic phase, it appeared that reviewing the workpapers of an unfamiliar preparer could lead to efficiency losses. Although, as predicted, task complexity did not affect the level of reperformance, it led to an increase in the detection rate of classification errors. Perhaps task complexity leads reviewers to pay more attention to preparers' reported exceptions. Together, these results suggested a more complex linkage between reperformance and classification accuracy than that hypothesized.

Third, while the review process led to a substantial improvement in the overall quality of the audit conclusions, there remained some residual inappropriate conclusions. This result suggested that the first level of review may not have detected all inappropriate conclusions and raised the question of whether subsequent reviews would detect the residual errors. Ramsay's (1994) results suggest that managers should be better than seniors at detecting conclusion errors, therefore, subsequent reviews by managers and partners may significantly reduce the remaining undetected conclusions errors.

Finally, task complexity and familiarity with the preparer interacted to determine the rate at which inappropriate conclusions were detected. Specifically, given a complex task, reviewers who were more familiar with the preparer were more effective than those who were less familiar with the preparer. While this finding might appear paradoxical in light of prior social psychology literature, it can be explained by the presented framework which decomposes the review process into an orientation and strategic phase. As discussed, preparer unfamiliarity created uncertainty and reviewers responded to this uncertainty by increasing orientation review effort. However, under time pressure, when orientation review effort increased, less time was available for the strategic phase. On the other hand, familiarity with the preparer allowed the reviewer to focus more review efforts on the strategic phase, ultimately leading to higher conclusion effectiveness. Therefore, to the extent that the review was not aimed at duplicating the preparer's work, familiarity with the preparer—although breeding a "positivity bias" (i.e., increased confidence in the preparer's work)—was beneficial.

We also found that reviewers who were familiar with the preparer were more effective on a complex task relative to a routine task. Perhaps too little skepticism was exercised when reviewing the workpapers of familiar preparers assigned routine tasks. The benefit of familiarity with the preparer, in allowing the reviewer to focus on audit conclusions, was dissipated when conjoined with routine tasks. It also appeared that familiarity with the preparer could generate false confidence when reviewing a routine task. To the extent that preparers made errors on routine tasks, the review process was less likely to detect them (see SEC 1981).

On the other hand, reviewers not familiar with the preparer were more effective on a routine task compared to a complex task. We argued that the conjunction of preparer unfamiliarity and task complexity led to excessive time being spent on the orientation phase, leaving less time for the strategic phase. With less time in the strategic phase, reviewers of the complex task accelerated processing, reducing conclusion effectiveness.

The preceding results also suggested that review enhancement tools should be sensitive to contextual variations. For instance, reviewers of familiar preparers did worse on routine tasks, as a result of overconfidence, so they may require supplemental incentives (aimed at reducing overconfidence) when they review routine tasks. On the other hand, time pressure seemed to account for the performance decrement of reviewers who were not familiar with the preparer, so such reviewers may require flexible time budgets (to compensate for additional orientation efforts) when they review complex tasks.

We conclude with limitations and directions for future research. First, reviewers were asked to assume that the preparer was both conscientious and cooperative. Prior negative experience (e.g., inept preparers) would likely induce different reactions. Second, reviewers reviewed workpapers under a fixed time budget to reflect practice (Solomon and Brown 1992), but auditors can adjust the length of review time across, as well as within, tasks (Kreutzfeldt 1992; Asare and Wright 1994). The degree to which our results generalize to a variable time budget setting is an empirical question. Finally, additional research could use computerized tasks which would allow the effort allocation between the orientation and the strategic phases to be monitored more precisely. Such research could clarify the linkage between reperformance rates and classification accuracy.

## APPENDIX

### **Manipulation of Familiarity with the Preparer**

#### ***Familiar Manipulation***

At the initial phase of the audit, you called the human resources coordinator and requested Mr. West to implement a partial year-end inventory program. Mr. West has been a staff auditor with your firm for two years and has prior experience on inventory engagements. You have personally worked with Mr. West on three other engagements and have found him to be both conscientious and cooperative.

#### ***Unfamiliar Manipulation***

Because the university division is located in another city, the partial year-end inventory program was assigned to and implemented by Mr. West, a staff auditor from an office closer to the inventory location. Such inter-office use of staff is routine in the firm. Mr. West has been a staff auditor with your firm for two years and has prior experience on inventory engagements. You have not personally worked with Mr. West although you can assume that he is both conscientious and cooperative.

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