

The Effects of Audit Review Format on the Quality of Workpaper Documentation and Reviewer
Judgments

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ABSTRACT: The promulgation of PCAOB Auditing Standard No. 3 (2004) highlights the recent focus on workpaper documentation quality and its influence on audit quality. Our study examines how the choice of audit workpaper review method may ultimately affect reviewer judgments through its impact on preparer workpaper documentation. Due to technological advancements such as e-mail and electronic workpapers, firms can now perform workpaper review electronically as well as through a more traditional “face-to-face” approach. Recent research has found that review mode can affect the judgments of auditors preparing the workpapers (Brazel, Agoglia, and Hatfield 2004). Our study extends the literature by examining the extent to which review mode (electronic vs. face-to-face) affects the quality of documentation in the workpapers and whether reviewers are able to discern and compensate for these documentation quality issues. We propose a model which predicts that the relationship between the method of review and reviewer judgment quality is mediated by the documentation quality assessment gap (i.e., actual versus reviewer assessments of documentation quality). Such a mediation model provides insight into *why* the review format affects reviewer judgment quality. Consistent with expectations, we find that preparers of workpapers who were anticipating an electronic review provided lower quality documentation than preparers expecting a face-to-face review. As predicted by our mediation model, we find that the effect of review mode on reviewer judgments is mediated by the documentation quality assessment gap. Specifically, when the mode of review was electronic, reviewers were unable to recognize the lower quality documentation, resulting in lower quality reviewer judgments compared to when the mode of review was face-to-face. These results suggest that the effect of review mode persists to the reviewer’s judgment through its influence on documentation quality.

Keywords: documentation; judgment quality; electronic review; face-to-face review

JEL Descriptors: D81, M40, M42

Data Availability: Data are available upon request.

1. Introduction

This study examines how the mode of audit workpaper review affects reviewer judgments through its influence on the quality of workpaper documentation. As evidenced by the release of new audit guidance, regulators are emphasizing the importance of workpaper documentation quality. Recently, the Public Company Accounting Oversight Board (PCAOB) issued Auditing Standard (AS) No. 3 addressing audit documentation. AS No. 3 states that auditors who prepare workpapers (hereafter preparers) should document sufficient information in their workpapers to enable an experienced auditor (e.g., reviewer) to understand the procedures performed, evidence obtained, and conclusions reached. This documentation should include evidence to support conclusions as well as any relevant information inconsistent with conclusions (PCAOB 2004). This recent attention to documentation quality underscores its significance for those who review the workpapers.

The primary objectives of the reviewer are to ensure the adequacy of the preparer's work and to draw his or her own conclusions based on the evidence the preparer documents in the workpapers (Tan 1995; Agoglia, Kida, and Hanno 2003). However, preparers may have motivation (e.g., preservation or enhancement of their reputations) to selectively record evidence more in line with their judgments, potentially affecting the quality of their workpaper documentation (Rich, Solomon, and Trotman 1997). As a consequence, the difficulty of the reviewer's task, and in turn the reviewer's effectiveness, may vary depending on the quality of the evidence documented by the preparer (Libby and Trotman 1993). For example, Ricchiute (1999) finds that biased preparer documentation biases the subsequent decisions of audit partners relying on that documentation. Recent results suggest that alternative methods of review may differentially affect preparer motivations (Brazel, Agoglia, and Hatfield 2004). Thus, if review

format affects the quality of the preparer's workpaper documentation, then choice of review format may have significant implications for reviewer judgments.

The technological advancements made in recent years (e.g., electronic workpapers and electronic communication) have provided reviewers with options regarding how they wish to conduct their reviews. Traditional methods of review in which the reviewer and preparer meet face-to-face to discuss reviewer concerns are being supplemented (and, in certain situations, supplanted) by less formal interaction, as reviewers have come to increasingly rely on electronic communication to conduct their reviews (Brazel et al. 2004). In the current audit environment, preparers can submit workpapers electronically, permitting reviewers to review the workpapers online and e-mail preparers with their related review comments. This "electronic" review (or e-review) allows for the review of multiple jobs concurrently and reduces the necessity for the reviewer to be present at the client or to coordinate schedules with preparers (Shumate and Brooks 2001). However, recent findings suggest that preparers regard electronic review as somewhat less demanding than face-to-face review and, in turn, approach/process audit evidence differently than when they expect a face-to-face review (Brazel et al. 2004). While this recent work finds that review format affects preparer judgments, it does not examine whether it affects the information content of preparer documentation or if its effects persist through the review process (i.e., to the judgments and perceptions of reviewers).

If a primary objective of the review process is quality control or to ensure proper audit documentation, the review process may indeed mitigate the effects of alternative forms of review. If, as suggested by Ricchiute (1999), such mitigation does not exist, the choice of review method made by reviewers may eventually end up improving or impairing reviewers' final audit judgments. In our study, we consider not only whether review format affects *reviewer* judgments

but, if so, why. We propose a model which predicts that the relationship between the method of review and reviewer judgment quality is mediated by the extent to which reviewers appropriately evaluate documentation quality (i.e., actual versus reviewer assessments of documentation quality).

In our study, audit seniors (preparers) were provided with prior year workpapers (which reflected positively on the client's financial condition) and current year evidence (which indicated declining financial conditions) for a hypothetical client and were asked to document evidence in the current year workpaper for a preliminary going concern conclusion.¹ Prior to the start of their task, preparers were informed that their workpapers would be reviewed, and of the format that review would take. Half of the preparers anticipated a face-to-face review (i.e., in-person meeting with the reviewer to discuss review notes), while the other half expected to be reviewed electronically (i.e., review notes are relayed and discussed via e-mail). To determine whether any effects of review mode persist through the review process, we matched audit managers (reviewers) with the preparers. Reviewers evaluated the preparers' documentation and provided a going concern assessment. Preparer documentation quality and reviewer judgment quality were assessed with the aid of audit experts.

Results indicate that preparers anticipating an electronic review provided their reviewers with workpaper documentation of lesser quality than those anticipating a face-to-face review. More importantly, it appears that the effect of review mode persists to reviewer judgments. Relative to face-to-face review, the quality of reviewers' going concern judgments was significantly lower when the workpaper preparers anticipated an electronic review. Results of the mediation analysis indicate that the effect of review mode on reviewer judgment quality was mediated by the documentation quality assessment gap (measured as the difference between

reviewer perceptions of workpaper documentation quality and actual documentation quality as determined by audit experts). Thus, we not only find that electronic reviews may lead to lower quality documentation from preparers, but also that the documentation issues may not be corrected by the review process and could eventually impair the final judgments of reviewers.

This study substantially extends the review process/accountability literature and has implications for practice. First, while the majority of studies in this research stream investigate the anticipation of review (vs. no review) on preparer perceptions and performance (e.g., Kennedy 1993), we consider the effect of mode of review on the audit *team* judgment by matching reviewers with preparers and following the effect of review mode through to the reviewer's judgment. Second, although Ricchuite (1999) finds that biased workpapers produce biased reviewer decisions, the expected quality differences in workpaper documentation in this study are due to an observable (and in practice, controllable) attribute (review mode). Recent findings suggest that managers and partners understand that workpapers prepared under electronic review tend to be of lower quality (Agoglia, Brazel, Hatfield, and Jackson 2005). Our reviewers were aware of under what review conditions the workpapers were prepared. Therefore, reviewers in the electronic condition may have been especially motivated to discount preparer documentation when developing their judgments or use the review process to correct for quality issues. We find that reviewers did not act on their negative perceptions related to electronic review. Third, our findings validate the increased scrutiny of audit documentation quality called for by the PCAOB in AS No. 3 (PCAOB 2004). Specifically, we find the choice of review method may influence the information content of audit documentation and final audit judgments.

The remainder of this paper is organized as follows. The next section discusses the background and related research and develops hypotheses. Sections 3 and 4 present the method and results, respectively. Section 5 offers conclusions and implications.

2. Background and hypotheses development

Alternative methods of review

Workpaper review, a fundamental part of the audit environment, is a hierarchical process in which the work of subordinates is scrutinized by more experienced auditors (e.g., Ashton et al. 1988; Libby and Trotman 1993). A considerable amount of research has examined how the anticipation of workpaper review affects preparers' judgments. Results of this research indicate that, for example, expectation of review can lead to: greater consensus and self insight, reduction of recency bias, greater documentation of evidence, and higher quality decisions (e.g., Johnson and Kaplan 1991; Kennedy 1993; Koonce, Anderson, and Marchant 1995; Tan and Kao 1999). This prior research typically focused on comparing the effects on preparers of anticipating an in-person review to no review. These in-person reviews serve to emulate a "traditional" review in which the reviewer meets with the preparer in person to discuss his or her review notes (*face-to-face review*). However, technological advances have resulted in a shift away from the traditional face-to-face review in recent years, as reviewers have come to increasingly rely on electronic communication to conduct their reviews from locations other their client (Brazel et al. 2004). These *electronic reviews* typically involve the reviewer examining workpapers online and interacting with the preparer electronically to relay, discuss, and resolve review notes. The International Federation of Accountants has recently acknowledged the increased use of

electronic reviews and has advised that an integral part of audit planning is determining whether manager and partner reviews should occur at the client, off-site, or both (IFA 2004).

Recent research suggests that alternative methods of review may result in differing judgments by staff anticipating the review. Brazel et al. (2004) compared the judgments of auditors expecting face-to-face reviews (face-to-face preparers) with the judgments of auditors expecting electronic reviews (e-review preparers). They found that, due to differing demands (e.g., perceptions of accountability, synchronicity of communication) perceived by preparers in the two review conditions, face-to-face preparers spent more time preparing a going concern workpaper (i.e., were less efficient) than e-review preparers. Additionally, face-to-face preparers were less likely to be influenced by prior year judgments (i.e., reduced anchoring) and provided higher quality judgments. Payne (2004) found that, relative to staff auditors anticipating a written review, those expecting a face-to-face review devoted greater effort, resulting in improved performance of complex tasks.² In summary, preparers appear to perceive face-to-face review as more demanding and therefore provide more pre-review cognitive effort. While these recent studies found that review format can influence preparer perceptions and judgments, they did not examine whether review mode affects workpaper documentation quality or whether the effects of review mode are mitigated by the review process or persist through to reviewer judgments.

Documentation quality

AS No. 3 (PCAOB 2004) provides guidance on the nature and extent of evidence that should be documented in the workpapers. Audit documentation can be in the form of paper, electronic file, or other media. The standard states that audit documentation should contain sufficient information to enable an experienced auditor to understand the procedures performed,

evidence obtained, and conclusions reached (PCAOB 2004). This standard emphasizes the need for documentation to be adequate for review and stresses that such documentation should not consist solely of evidence consistent with auditor conclusions, but should also include relevant inconsistent evidence. While AS No. 3 (PCAOB 2004) states that the nature and extent of audit documentation may be affected by such factors as the risk of material misstatement and the extent of judgment required, the standard does not speak to the possibility that alternative review methods may impact the quality of documentation. Thus, this new audit guidance serves to highlight the importance of workpaper documentation quality and its significance for those who review the workpapers, but it does not consider how the choice between available review methods may influence how preparers document their work.

Koonce et al. (1995) found that the anticipation of review (vs. no review) increased the amount of documentation provided by preparers, but their review manipulation did not lead to *qualitative* differences in the documentation supplied by their two experimental groups. However, their review condition was more similar to an e-review than a face-to-face condition. Thus, currently we do not know whether managers and partners can use the choice of review mode as a tool to improve the information content of audit documentation provided by their staff. We explain below how preparers anticipating a more demanding face-to-face review may provide audit documentation to their reviewers that is qualitatively superior to that supplied by e-review preparers.

A recent study by Brazel et al. (2004) considered the effect of review mode on the work of preparers. Although they did not examine if alternative review formats affect preparer documentation quality, their results suggest that preparers process audit evidence differently depending on the type of review expected. Preparers anticipating a face-to-face (vs. electronic)

review processed evidence more systematically and indicated they were more concerned with the effectiveness of their workpapers. Face-to-face preparers may have quelled their concerns regarding effectiveness and managed the more demanding face-to-face review by preparing high quality audit documentation to refer to when responding to (or preemptively heading off) “on the spot” questions/comments from their reviewers. Given that the asynchronous reply inherent in e-review allows preparers more time to respond to reviewer concerns (and even permits an opportunity to revisit the underlying evidence before responding), e-review preparers preferred to manage reviewer perceptions of their performance by, instead, focusing more on preparing the initial (pre-review) workpaper efficiently and meeting budget.³ In order to increase efficiency, e-review preparers tended to anchor on prior year workpapers and conclusions more than their face-to-face reviewed counterparts (i.e., a “Same As Last Year” or SALY approach). Thus, they tended to focus on evidence consistent with prior year conclusions, resulting in greater workpaper documentation of such evidence (Brazel et al. 2004).⁴ In the typical case where conditions at a client have changed from the prior year, a SALY approach may result in documentation that does not appropriately reflect those changes (Joyce and Biddle 1981; Tan 1995; Brazel et al. 2004). We therefore expect that the workpaper documentation of preparers anticipating a face-to-face review will be of higher quality than that of preparers anticipating an electronic review. Thus, we test the following hypothesis:

HYPOTHESIS 1: Face-to-face preparers will provide workpaper documentation of higher quality than will e-review preparers.

Reviewer Judgments

Prior research has investigated the hierarchically-structured audit team’s effect on audit judgments. Results from this research suggest that hierarchical audit teams tend to exhibit greater

judgment consensus and accuracy than individuals (e.g., Trotman 1985; Trotman and Yetton 1985). Libby and Trotman (1993) propose that one reason the review process is effective is that reviewers and preparers focus their attention on different types of information. However, they also note that the reviewer and preparer do not necessarily evaluate the same evidence.

Reviewers have access to what is recorded in the workpapers by the preparer, and the preparer may have motivation/incentive (e.g., preservation or enhancement of their reputations) to selectively document evidence more in line with their judgments (Gibbins 1984; Libby and Trotman 1993; Rich et al. 1997). Further, these incentives appear to be influenced by the type of review expected by preparers (Brazel et al. 2004). Thus, although the reviewer will have access to the data set documented by the preparer, this data set may not be as rich as the data set originally observed by the preparer, potentially reducing reviewer effectiveness (Libby and Trotman 1993).

Ricchuiti (1999) finds that preparer bias results in less inconsistent evidence being recorded in the workpapers. In a separate experiment, he also finds that reviewers judgments are slanted toward the bias of the information recorded in the workpapers. However, in the current context, reviewers are aware of review conditions and have the ability to consider the effect of review mode when evaluating and relying on workpapers. Recent findings demonstrate that managers and partners perceive that workpapers are of higher quality when prepared with the expectation of a face-to-face review relative to an electronic review (Agoglia, Brazel, Hatfield, and Jackson 2005). To the extent that reviewers can perceive a cause of bias in the preparation of workpapers, they may give less weight to the documentation in the workpapers (e.g., Barrick, Cloyd, and Spilker 2004; Hatfield 2001). However, to the extent that reviewers of electronic-reviewed workpapers *do not* recognize a reduction in documentation quality, the reviewers

judgments will be unduly effected by the preparer's less informative documentation. That is, if e-review results in lower quality workpaper documentation by the preparer than face-to-face review (H1) and reviewers have difficulty detecting documentation issues, then there is likely to be a larger *documentation quality assessment gap* (i.e., the difference between reviewer perceptions of workpaper documentation quality and actual documentation quality as determined by audit experts) for e-reviewers than for face-to-face reviewers. In turn, given their inability to recognize the inferior documentation submitted by electronic review preparers, *reviewer* judgments under e-review will likely be of lower quality than those under face-to-face review. Thus, we expect review mode to affect reviewer judgments, and that this effect will be mediated by the documentation quality assessment gap (see Figure 1), leading to the following hypotheses:

HYPOTHESIS 2: The quality of the reviewers' judgments will be lower when the mode of review is electronic versus face-to-face.

HYPOTHESIS 3: The reviewers' documentation quality assessment gap will mediate the effect of review mode on reviewers' judgment quality.

[Insert Figure 1 about here]

3. Method

Participants

Sixty practicing auditors from large international public accounting firms participated in this study, 30 as preparers and 30 as reviewers. Auditors participating as preparers were audit seniors with an average of about three years experience, while auditors participating as reviewers were generally audit managers with an average of over seven years experience.⁵ Prior research and discussions with audit managers revealed that auditors with these levels of experience would

be familiar with preparing workpapers relating to the financial viability of their clients and with reviewing these workpapers, respectively (e.g., Libby and Trotman 1993; Rau and Moser 1999).

Experimental Task

Documentation Phase

Preparer participants prepared a preliminary going concern evaluation workpaper for a hypothetical client. The task was adapted from Tan (1995) and completed via computer (see also Brazel et al. 2004). Preparers received detailed instructions regarding the task, relevant authoritative guidance, prior year workpapers, and current year audit evidence. Consistent with Tan (1995), prior year workpapers documented a conclusion that the “going concern assumption appears reasonable” and included a corresponding memo summarizing the important evidence.⁶ The prior year memo contained ten items that were largely positive with respect to the financial condition of the client. In contrast, the current year audit evidence, consisting of 30 items, indicated a decline in financial conditions for the client, with ten items that supported the going concern assumption, ten items that undermined the going concern assumption, and ten irrelevant items (see Tan 1995).⁷ Preparers were asked to document (in the current year workpaper) evidence for a preliminary going concern conclusion.⁸ Three audit experts evaluated the quality of preparers’ audit documentation (see Section 4).

Preparers were randomly assigned to one of two conditions: face-to-face review or electronic review. Preparers in the face-to-face review group were informed that their workpaper would be reviewed by an audit manager who would meet with the preparer in person to discuss any review notes regarding the workpaper. Electronic review preparers were also advised of the workpaper review, but informed that all correspondence with their reviewers would take place

via e-mail.⁹ All preparers had access to relevant excerpts from *Statement on Auditing Standards (SAS) No. 59* (AICPA 1988) regarding the going concern assessment and viewed identical prior year going concern evaluation workpapers and current year audit facts (which were randomized to control for order effects). Preparers were able to access this data while preparing their workpapers. They then answered a series of demographic and case-related questions.

Review Phase

Reviewer participants were matched with a preparer and asked to assume the role of audit manager on the preparer's engagement. Reviewers were provided with relevant audit guidance (i.e., the *SAS No. 59* excerpts provided to preparers), the prior year going concern evaluation workpaper, and the preparer's current year going concern workpaper. Reviewers were instructed to review the preparer's workpaper and provide review notes to the preparer. Reviewers were told to perform their review as if they would be relaying their review notes to the preparer either via a face-to-face meeting or electronically via e-mail, depending on (corresponding to) their preparer's condition. After completing their reviews, they recorded the time it took them to perform their reviews. On separate 11-point scales, reviewers also assessed: the "quality of the supporting documentation" provided by their preparer (0 = "very low"; 10 = "very high"); "how much [they] would rely on the going concern documentation" provided by their preparer (0 = "no reliance"; 10 = "complete reliance"); and "how much additional work" they expect that the preparer "will need to do to produce the final version of this workpaper" (0 = "no rework"; 10 = "substantial rework"). In addition, reviewer participants provided their own assessment of the reasonableness of the going concern assumption for the hypothetical client on a 15-point scale,

with endpoints labeled “definitely not reasonable” (coded as -7) and “definitely reasonable” (coded as +7). They then answered a series of demographic and case-related questions.

4. Results

Documentation quality

Hypothesis 1 examines measures of the quality of documentation in the preparers’ going concern workpapers. Specifically, H1 predicts that face-to-face review preparers’ documentation will be of higher quality than that of preparers anticipating an electronic review. To determine the quality of preparers’ workpaper documentation, we enlisted the assistance of three experts (all audit partners with an average of 10.6 years experience) from large international accounting firms. Supplied with the same materials as those utilized by preparers, the experts were asked to individually evaluate, “[b]ased on the full set of current year audit facts, the quality of the supporting documentation provided” for each of the 30 preparers on an 11-point scale from 0 (“very low”) to 10 (“very high”). Results indicate that the experts considered the evidence documentation provided by the face-to-face group to be of higher quality than that of the e-review group (mean expert quality rating = 5.69 versus 3.79, respectively, $p = .001$; Table 1), providing support for H1.¹⁰

The experts were also asked to provide a list (based on the full set of current year evidence) of the “most important of these evidence items with respect to the data that [they] feel would be most essential for an audit senior to bring to the attention of a reviewer (audit manager) when evaluating the client’s ability to continue as a going concern.” Experts listed the items and then weighted the “relative importance” of each listed item. A composite of the experts’ item weightings was computed such that a score of 100 (0) would indicate that the preparer included

all (none) of the items considered most important by the experts, with higher scores indicating greater inclusion of the most important items. A total of twelve items were listed as “most important” by the experts. Both the *number of important items documented* and the *importance weighting score* provide indirect measures of documentation quality. Consistent with the notion that documentation quality is higher for face-to-face review, preparers anticipating a face-to-face review documented a significantly greater number of the experts’ “important items” in their workpapers (mean = 6.07 items) than those expecting to be reviewed electronically (mean = 4.33 items, $p = .002$; Table 1). With respect to the importance weighting measure, results are also consistent with H1 predictions, with face-to-face preparers’ workpapers scoring higher than e-review preparers’ (means = 53.5 and 39.5, respectively, $p = .040$; Table 1).

[Insert Table 1 about here]

Reviewer Going Concern Assessments

Hypothesis 2 predicts that reviewer going concern assessments will be of higher quality when the workpapers are prepared under the anticipation of a face-to-face review than an electronic review. Following Tan (1995), we measure judgment quality by computing the absolute deviations of reviewers’ assessments from the mean of an expert group. Prior to examining preparers’ workpapers (i.e., providing our measure of documentation quality), our experts assessed the reasonableness of the going concern assumption for the hypothetical client on a 15-point scale from -7 (“definitely not reasonable”) to +7 (“definitely reasonable”). Similar to the experts, our reviewers also provided a going concern assessment on the same scale, though after performing their reviews of the workpapers.

Non-tabulated results indicate that the mean assessment of reviewers of face-to-face preparers (0.67) mirrors that of the experts (mean = 0.67).¹¹ In contrast, the mean assessment of

reviewers of electronic review preparers (2.33) differs considerably from the experts. Mean absolute differences from the experts' assessment are significantly smaller for the face-to-face review group (1.38) than for the electronic review group (2.73, $p = .003$; Table 1), providing support for H2. Thus, reductions in preparer judgment and documentation quality engendered by electronic review may not be corrected by the review process and could persist through to the final judgments of reviewers.

Mediation Analysis

While H2 predicts that review format affects the reviewers' judgments, H3 considers why the relationship exists. To identify the mechanism behind this relationship, we compare reviewers' perceptions of preparer documentation quality with the experts' determination of preparer documentation quality.¹² Reviewers and experts assessed preparers' workpaper documentation quality on an 11-point scale from 0 ("very low") to 10 ("very high"). The results from H1 indicate that the experts, who were privy to all of the evidence available to preparers, deemed electronic preparers' documentation to be of lower quality. The results of H2 suggest that both face-to-face and electronic preparers were able to substantially persuade their reviewers with their audit documentation and reviewers in the electronic condition, unlike our experts, were unable to identify documentation quality issues. With respect to differences between reviewers' perceptions and experts' determination of documentation quality, we therefore expect greater absolute reviewer-expert differences (i.e., the "documentation quality assessment gap") will occur for workpapers prepared by auditors anticipating an electronic (versus face-to-face) review. Consistent with this expectation, the quality assessment gap was significantly greater for the electronic review condition than for the face-to-face condition (mean absolute reviewer-

expert differences = 2.63 and 1.29, respectively, $p = .004$; Table 1). An examination of the mean responses from reviewers and experts indicates that, relative to the experts, reviewers perceived the e-review preparers' supporting documentation to be of significantly higher quality (means = 6.53 and 3.79 for the reviewers and experts, respectively; $p < .001$, two-tailed). No such significant difference occurred with the higher quality face-to-face preparers' documentation (means = 5.33 and 5.69 for the reviewers and experts, respectively, $p = .461$, two-tailed).

Hypothesis 3 statistically tests whether the aforementioned documentation quality assessment gap plays a significant role in reviewer judgments. Specifically, H3 predicts that reviewers' documentation quality assessment gap mediates the relationship between review format and reviewer judgment quality. In order to test this mediation hypothesis, we follow the procedures outlined in Baron and Kenny (1986) and estimate the following regressions:

$$QAG_i = \alpha_0 + \alpha_1 RF_i + \varepsilon_i \quad (1)$$

$$RJQ_i = \gamma_0 + \gamma_1 RF_i + \varepsilon_i \quad (2)$$

$$RJQ_i = \delta_0 + \delta_1 RF_i + \delta_2 QAG_i + \varepsilon_i \quad (3)$$

where QAG is the reviewer's documentation quality assessment gap calculated as the absolute difference between the reviewer's assessment of documentation quality and the mean of the three experts' assessment of documentation quality. RF refers to the review format and is operationalized as 0 if the workpaper was prepared by staff expecting a face-to-face review and 1 if the workpaper was prepared by staff expecting an electronic review. RJQ represents the quality of reviewers' going concern judgments and is calculated as the absolute difference between the reviewer's judgment and the mean judgment by three audit experts.

According to Baron and Kenny (1986), the mediation effect predicted by H3 would be indicated if the following three conditions are met. First, the independent variable (RF) must

affect the presumed mediator (QAG). This is path A in Figure 1 and α_1 in Equation (1) above. Second, the independent variable must affect the dependent variable (RJQ). This is represented by path C in Figure 1 and γ_1 in Equation (2) above. Third, the mediator must affect the dependent variable in the presence of the independent variable. This is path B in Figure 1 and δ_2 in Equation (3) above. If all of these conditions hold, then the effect of the independent variable on the dependent variable must be less in Equation (3) than in Equation (2). If γ_1 in Equation (2) is significant, but δ_1 in Equation (3) is insignificant, there is full mediation. Alternatively, if γ_1 in Equation (2) and δ_1 in Equation (3) are both significant, but δ_1 in Equation (3) declines notably relative to γ_1 in Equation (2), there is partial mediation.

Significance tests for mediation are discussed in Baron and Kenny (1986), MacKinnon and Dwyer (1993), and MacKinnon, Warsi, and Dwyer (1995). The test we employ is the one most commonly used in the social sciences (MacKinnon and Dwyer 1993), which is expressed as follows:

$$Z = \frac{\alpha_1 \delta_2}{\sqrt{\alpha_1^2 \sigma_\delta^2 + \delta_2^2 \sigma_\alpha^2 - \sigma_\alpha^2 \sigma_\delta^2}} \quad (4)$$

where the numerator is the product of the indicated coefficients from Equations (1) and (3) and the denominator is the estimation of the standard deviation (σ) for the mediating effect.

Table 2 reports regression results for Equations (1) through (3). To test for the mediation effect predicted by Hypothesis 3, we focus on whether the three conditions discussed above have been satisfied.¹³ The results of estimating Equation (1) reveal that the coefficient on RF is positive and significant ($p = .007$), satisfying condition one. Similarly, the results of estimating Equation (2) reveal that the coefficient on RF is positive and significant ($p = .005$), satisfying condition two. The results of estimating Equation (3) reveal that the coefficient on QAG is

positive and significant ($p = .041$), satisfying condition three. We further find that the mediation effect predicted by Hypothesis 3 is significant (non-tabulated $Z = 1.79$, $p = .037$) using the test statistic stated in Equation (4). Thus, our results demonstrate that the documentation quality assessment gap mediates the effect of review format on reviewer judgment quality. However, while the coefficient on RF is considerably reduced (from 1.355 in Equation (2) to .857 in Equation (3)), RF in Equation (3) remains marginally significant ($p = .086$); so we hesitate to claim that full mediation is occurring.¹⁴

[Insert Figure 2 and Table 2 about here]

Additional Analysis

Our results suggest that the effect of review mode persists to reviewers' judgments through its influence on workpaper documentation quality. However, in practice, reviewers may choose to: rely less on preparers' initial documentation, increase the amount of rework they require their preparers to perform, provide more review notes to their preparers, and/or spend more time reviewing the workpapers. While any of these actions could potentially help reduce the effect of review mode, additional data gathered suggests that reviewers of e-review preparers were no more likely to utilize these actions than reviewers of face-to-face preparers. Reviewers were asked to assess (on 11-point scales) how much they felt they could rely on their preparers' going concern documentation (0 = "no reliance"; 10 = "complete reliance") and how much additional work they expect that the preparer "will need to do to produce the final version of this workpaper" (0 = "no rework"; 10 = "substantial rework"). While these differences are not significant, reviewers of e-review preparers placed *more* reliance on their preparers' documentation (non-tabulated means = 4.47 and 3.80, respectively, for e-review and face-to-face groups, $p = .307$, two-tailed) and required *less* rework than the face-to-face group, (non-tabulated

means = 5.20 and 6.33, respectively, for e-review and face-to-face groups, $p = .145$, two-tailed). Similarly, reviewers of e-review preparers neither provided significantly more review notes to their preparers (non-tabulated means = 6.40 and 6.13, respectively, for e-review and face-to-face groups, $p = .664$, two-tailed) nor took significantly longer to perform their reviews than reviewers of face-to-face preparers (non-tabulated means = 18.8 and 17.5 minutes, respectively, for e-review and face-to-face groups, $p = .456$, two-tailed). Thus, relative to reviewers of face-to-face preparers, reviewers of e-review preparers appear unlikely to take additional measures to compensate for/respond to the generally lower documentation quality of their preparers' workpapers.

5. Discussion and concluding remarks

Recent technological enhancements, which have made the use of electronic workpapers and electronic communication commonplace in public accounting, provide reviewers with options regarding how they wish to conduct their reviews and change the structure of the review process. As a result, there has been a shift away from the traditional face-to-face review in recent years, as reviewers have come to increasingly rely on electronic communication to conduct their reviews (Brazel et al. 2004). Although electronic review may provide some efficiencies to reviewers (e.g., review of multiple jobs concurrently, reduced need to coordinate schedules with preparers), recent findings suggest that preparers regard electronic review as somewhat less demanding than face-to-face review and, in turn, approach audit evidence less systematically than when they expect a face-to-face review (Brazel et al. 2004). While this recent work finds that review format can affect preparer judgments, it does not examine whether review format affects workpaper documentation quality and, if so, whether this effect persists through the

review process. Our study extends the literature by demonstrating that the form of review chosen by reviewers eventually affects their own perceptions and judgments through its influence on preparer workpaper documentation.

Results indicate that e-review preparers provided their reviewers with lower quality workpaper documentation than face-to-face preparers. More critically, the effect of review mode appears to persist through the review process. Even though prior research suggests that managers and partners perceive a quality difference in workpapers due to the two types of review format (Agoglia et al. 2005), in the current study, reviewers receiving workpapers from preparers anticipating an electronic review appear unable to recognize or compensate for documentation quality issues in their preparers' workpapers. Specifically, relative to face-to-face review, reviewers' going concern judgments were of lower quality when their workpaper preparers anticipated an electronic review. To gain insight into the mechanism driving this effect, we test a model which predicts that the relationship between the review mode and reviewer judgment quality is mediated by the documentation quality assessment gap (i.e., actual versus reviewer assessments of documentation quality). Results of this mediation analysis suggest that the reviewers' inability to recognize the lower documentation quality of workpapers prepared under electronic review resulted in the reduced quality of their going concern judgments.

The findings of this study have implications for practice and future research. First, our results regarding the relationship between workpaper documentation and reviewer judgment quality appear to validate the increased scrutiny of audit documentation quality called for by the PCAOB (2004). Second, given that electronic review resulted in lower quality workpaper documentation and reviewer judgments, audit firms may want to consider greater use of face-to-face review in cases where (similar to our task) reviewers are in less frequent contact with the

client and, consequently, likely to rely more heavily on the evidence documented in the workpapers. In contrast, our omnipotent experts were able to detect quality issues in the documentation of electronic preparers. Thus, for reviewers that invest a considerable amount of time at the client acquiring an understanding of the company and its audit issues, electronic review may be a viable alternative given their substantial client knowledgebase. Future research could formally investigate these compensating effects and review strategies. Such research may be very useful in today's audit environment as the Sarbanes Oxley Act of 2002 has put a tremendous strain on the allocation of reviewer resources. Third, our study concerned a relatively complex task involving evaluation of a client's going concern assumption. Further work could explore the effects of review mode on more rudimentary tasks (e.g., detailed substantive tests) performed by preparers and reviewed by their superiors. It may be that reviewers are better able to recognize documentation quality issues in their preparers' workpapers as task complexity decreases, which would allow audit firms to identify environments/tasks where electronic review could be employed without sacrificing audit effectiveness. Such research will further our understanding of how alternative review formats affect audit quality.

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Figure 1
Mediation Model

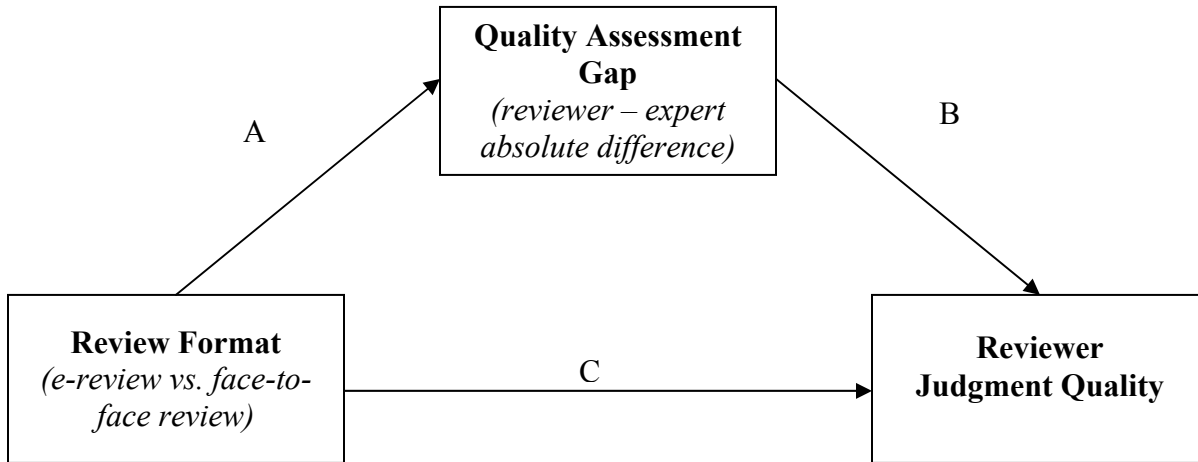
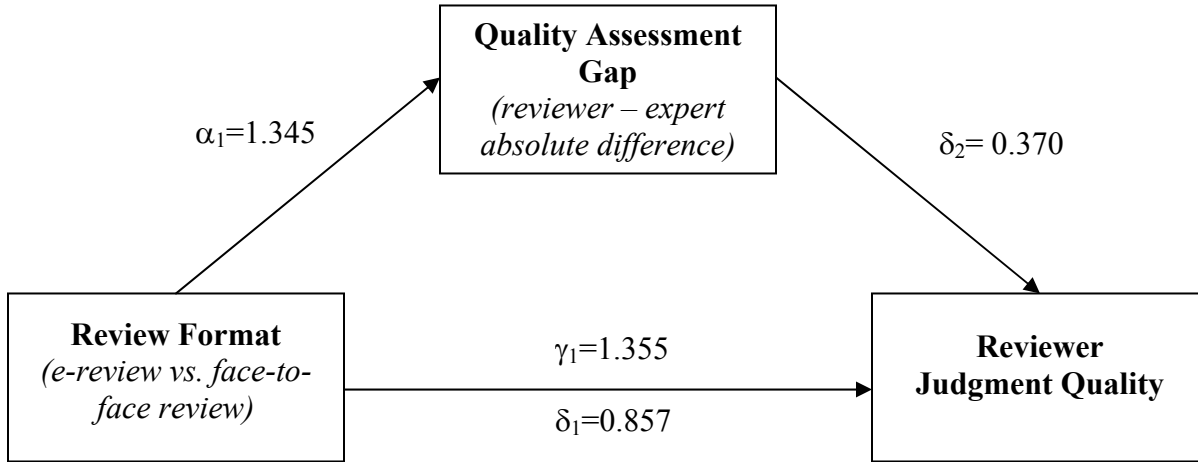


Figure 2
Mediation Model-Path Coefficients



Note: The coefficient for the direct path from *Review Format* to *Reviewer Judgment Quality* is represented by γ_1 when the mediator (*Quality Assessment Gap*) is not included in the regression and δ_1 when the mediator is included in the regression. The significance level for γ_1 is .005 increasing to .086 for δ_1 . The coefficients for the indirect paths (α_1 and δ_2) are both significant ($p < .05$) (See Table 3).

The regressions are specified as follows:

$$QAG_i = \alpha_0 + \alpha_1 RF_i + \varepsilon_i \quad (1)$$

$$RJQ_i = \gamma_0 + \gamma_1 RF_i + \varepsilon_i \quad (2)$$

$$RJQ_i = \delta_0 + \delta_1 RF_i + \delta_2 QAG_i + \varepsilon_i \quad (3)$$

TABLE 1
Workpaper Documentation Quality and Reviewer Judgment Quality (H1 & H2)

Variable ^a		Face-to-Face Review	Electronic Review	<i>t</i> -statistic ^b	<i>p</i> -value
<i>Expert assessment of documentation quality (H1)</i>	Mean (SD)	5.69 1.62	3.79 1.42	3.42	0.001
<i>Reviewer assessment of documentation quality</i>	Mean (SD)	5.33 2.61	6.53 1.89	1.44	0.160
<i>Documentation Quality Assessment Gap</i> (reviewer-expert absolute difference)	Mean (SD)	1.29 1.13	2.63 1.38	2.92	0.004
<i>Number of Important Items Documented</i> (determined by experts)	Mean (SD)	6.07 1.67	4.33 1.23	3.24	0.002
<i>Documentation Importance Weighting Score</i> (determined by experts)	Mean (SD)	53.5 20.6	39.5 21.4	1.83	0.040
<i>Reviewer Judgment Quality</i> (reviewer-expert absolute difference) (H2)	Mean (SD)	1.38 1.28	2.73 1.17	3.03	0.003

^a The *Expert* and *Reviewer assessment of documentation quality* represent the mean responses of the experts and reviewers, respectively, to the prompt “The quality of the supporting documentation provided by this audit senior can be described as:”. Responses were recorded on an 11-point scale where 0 = “very low” and 10 = “very high.” The *Quality Assessment Gap* was computed as the absolute difference between reviewer and expert assessments of documentation quality. *Number of Important Items Documented* refers to the number of items experts considered “most important” that were documented by the preparer in the workpapers. For *Documentation Importance Weighting Score*, experts weighted the “relative importance” of each “important item”. This measure was computed such that a score of 100 (0) would indicate that the preparer included all (none) of the items considered most important by the experts, with higher scores indicating greater inclusion of the most important items. *Reviewer Judgment Quality* was computed as the absolute deviation of each reviewer’s going concern assessment from the experts’ mean going concern assessment. Reviewer participants (as well as experts) were prompted to “provide your own going concern assessment” for the hypothetical client on a 15-point scale from -7 (“definitely not reasonable”) to +7 (“definitely reasonable”).

^b All tests are one-tailed due to the directional nature of expectations, except for the *Reviewer* documentation quality assessment. For this measure, no directional expectations were made and therefore a two-tailed test was performed.

TABLE 2
Regression Results for Test of Mediation^a (H3)

Dependent Variable	Coefficients		
	Intercept	Review Format (RF)	QAG
<i>Quality Assessment Gap (QAG)</i>	1.289	1.345	
Standard error	.326	.461	
p-value (two-tailed)	.001	.007	
<i>Reviewer Judgment Quality (RJQ)</i>	1.377	1.355	
Standard error	.316	.447	
p-value (two-tailed)	.001	.005	
<i>Reviewer Judgment Quality (RJQ)</i>	.900	.857	.370
Standard error	.372	.481	.173
p-value (two-tailed)	.023	.086	.041

^a Note: The regressions are specified as follows:

$$QAG_i = \alpha_0 + \alpha_1 RF_i + \varepsilon_i \quad (1)$$

$$RJQ_i = \gamma_0 + \gamma_1 RF_i + \varepsilon_i \quad (2)$$

$$RJQ_i = \delta_0 + \delta_1 RF_i + \delta_2 QAG_i + \varepsilon_i \quad (3)$$

where: *Review Format* (RF) was coded as 0 for face-to-face review and 1 for electronic review; *Quality Assessment Gap* (QAG) was computed as the absolute difference between reviewer and expert assessments of documentation quality; and *Reviewer Judgment Quality* (RJQ) represents the absolute difference between reviewer and expert going concern assessments.

Endnotes

1. The going concern assumption, made for the purposes of financial reporting, refers to the expectation that an entity will continue operations (i.e., will not fail for a period exceeding one year) in the absence of significant information to the contrary (AICPA 1988).
2. While Payne (2004) does not investigate electronic review, a written review is likely quite similar in terms of timing and expected response, with the medium (paper versus electronic file) being the primary difference.
3. Thus, the anticipated mode of review influenced the relative weight preparers placed on the often conflicting goals of audit efficiency and effectiveness.
4. Brazel et al. (2004) develop these expectations based on the Heuristic-Systematic Model (Chen and Chaiken 1999). The model states that increased pressure for correct conclusions promotes more systematic, comprehensive, and time-consuming information processing. Increased concern over efficiency promotes a heuristic processing mode where suitable shortcuts will be used to decrease processing time and effort (in this context, anchoring on the prior year).
5. There are no significant differences in audit experience between preparer groups (means = 32.27 and 35.53 months, $t = .617$, $p = .542$, for the face-to-face and electronic review conditions, respectively) or reviewer groups (means = 7.23 and 7.13 years, $t = .083$, $p = .935$, for reviewers in the face-to-face and electronic review conditions, respectively). Also, there are no significant differences (all p 's $> .35$) between groups on other demographic variables (e.g., perception of the percentage of firms that fail, client size).
6. As with Tan (1995), the prior year workpaper also presented the prior year preparer's preliminary conclusion regarding the reasonableness of the client's going concern

assumption numerically (+4 on a scale where -7 = “definitely not reasonable” and +7 = “definitely reasonable”).

7. Similar to Cohen, Krishnamoorthy, and Wright (2000), we investigate auditor performance under declining financial conditions due to the increased risks auditors face under such conditions (e.g., the failure to modify the audit opinion prior to client bankruptcy).
8. Preparers documented evidence they considered relevant to the going concern assessment from the available evidence. Preparers were also asked to provide a preliminary assessment of the reasonableness of the client’s going concern assumption on the same -7 to +7 scale as presented in the prior year workpaper.
9. A manipulation check revealed that preparers understood and anticipated their respective review conditions (face-to-face or electronic review). One participant in the face-to-face review condition indicated that he did not expect a face-to-face review. Removing this participant’s responses from the analysis does not affect the conclusions drawn. Preparers later met or corresponded via e-mail with a reviewer. Logistical issues necessitated that these reviewers (nine, in total, who corresponded with all 30 preparers) were individuals other than the reviewer participants in our study (who reviewed only a single preparer’s documentation).
10. Comparisons between face-to-face and electronic review conditions are tested using *t*-tests. Due to the directional nature of expectations, all tests are one-tailed unless otherwise stated.
11. The mean going concern assessment of the experts in the current study (0.67) is consistent with that obtained from four audit partners (0.50) who were provided with identical prior year and current year information in Tan (1995).

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12. Recall that, while reviewers had the current year workpaper (i.e., the current year audit evidence items documented in the workpaper by their preparers), the experts had access to the complete set of current year evidence items. Both the experts and the reviewers had access to the prior year workpapers, as well as relevant authoritative guidance.
 13. For the mediation analysis, all reported p -values are two-tailed.
 14. According to Baron and Kenny (1986), it is generally very difficult to identify a variable that is fully mediating in social science research.