

How Do Audit Workpaper Reviewers Cope with the Conflicting Pressures of Detecting Misstatements and Balancing Client Workloads?

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SUMMARY: The proliferation of electronic workpapers at audit firms allows audit managers and partners the choice of interacting electronically with their audit teams, as opposed to communicating with them in person. Prior research indicates that in-person discussion during review positively impacts audit effectiveness, while electronic review may improve audit efficiency. Thus, the choice of review format can be viewed as both a crucial and controllable audit input that can affect audit quality and, in turn, the reliability of financial statements. Still, little is known about how this decision is made. We conduct a survey and an experiment to extend the audit literature by examining reviewers' choice of review format and by considering factors that influence this important choice. Survey evidence suggests that reviewers perceive in-person interaction during review as more effective and electronic interaction as more convenient. Given these findings, we conduct an experiment that explores whether misstatement risk and workload pressure influence the choice of review method. We find that these factors interact to affect reviewer behavior. Specifically, workload pressure can increase the likelihood of electronic review, but only when misstatement risk is low. When risk is high, reviewers choose to employ in-person reviews regardless of workload pressures. These findings are particularly relevant in light of changes in the regulatory environment that both emphasize the auditor's role in detecting fraud/errors and exacerbate traditional workload pressures during busy times of the year. Our results suggest that reviewers cope with these conflicting pressures by choosing alternative review formats.

Keywords: audit quality; electronic communication; face-to-face interaction; misstatement risk; review process; workload pressure.

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INTRODUCTION

This study examines how risk of misstatement and workload pressure affect audit workpaper reviewers' choice of review format. Recently, auditors have witnessed a number of changes in their regulatory environment that have increased their workloads (e.g., [U.S. House of Representatives 2002](#); [Securities and Exchange Commission \[SEC\] 2005](#); [Commission of the European Communities 2006](#); [Public Company Accounting Oversight Board \[PCAOB\] 2007](#)). The advent of electronic communication and electronic workpapers has provided auditors with the means to alleviate certain pressures on firm resources. Electronically reviewing workpapers and transmitting review notes can ease scheduling issues and reduce reviewer travel time as it permits reviewers to review multiple jobs concurrently and from a remote location. However, prior research suggests that face-to-face communication during review has the potential to improve audit quality ([Agoglia et al. 2009](#)). Concerns over the effectiveness of reviews are highlighted by recent PCAOB inspections which raise questions about how engagement risk impacts the thoroughness of the review process ([PCAOB 2008](#)). Further, the International Federation of Accountants (IFAC) acknowledges current alternatives available to reviewers and advises that explicit consideration be given to the review format choice during the audit planning process ([IFAC 2009](#)). While prior research has concentrated on the impact and extent of review (e.g., [Trotman 1985](#); [Bamber and Ramsey 1988](#); [Ramsay 1994](#); [Gibbins and Trotman 2002](#); [Fargher et al. 2005](#)), our study contributes to the literature by focusing on the choice between alternative review formats.

As reviewers utilize different methods of review, they are likely to form perceptions regarding their review options. This, in turn, may affect their decision of how to conduct their reviews. The literature suggests that an individual's choice of communication medium is, in part, dependent on the perceived advantages and disadvantages of the medium, given the characteristics of the particular task at hand ([Webster and Trevino 1995](#)). Audit guidance prescribes and prior research indicates that risk is a characteristic that can affect auditor judgments and impact audit quality (e.g., [Biggs et al. 1988](#); [Mock and Wright 1993](#); [Bell et al. 1994](#); [Davidson and Gist 1996](#); [Mueller and Anderson 2002](#); [American Institute of Certified Public Accountants \[AICPA\] 2006a, 2006b](#)). While recent field research has not found a link between client risk and the *extent* of audit review (e.g., [Gibbins and Trotman 2002](#); [Fargher et al. 2005](#)), it is possible that reviewers will weigh the relative advantages/disadvantages of electronic and face-to-face interaction differently depending on the level of client risk. In short, audit partners and managers may choose to mitigate client risks and maintain audit quality by reviewing the work of subordinates in person (versus simply spending more time reviewing). Review mode choices may also be sensitive to the intensity of reviewers' workloads. This could be particularly true in contemporary audit settings where workloads can, at times, be quite compressed. Given the conveniences typically associated with electronic review, reviewers may consider its relative advantages to be more crucial when balancing a substantial client workload.

We conduct both a survey and an experiment to investigate the review mode choice. We first examine reviewer perceptions regarding the relative advantages of face-to-face and electronic review modes through a survey of practicing audit partners and managers. Our survey results indicate that reviewers view in-person interaction during review as more effective and electronic interaction as more convenient. Further, reviewers report that they use, on average, electronic and in-person communication for roughly an equal proportion of their review interactions. While these survey results are informative, [Ball \(2008, 427\)](#) suggests that "people (including managers and

auditors) do not always do what they say they do, or even what they think they do.” Thus, we conduct an experiment to test the validity of these perceptions.

The experiment examines if and how audit partners and managers cope with the conflicting pressures of detecting misstatements and balancing client workloads by choosing alternative review formats. We present auditors with a case involving the review of workpapers relating to the substantive testing of the sales and collection cycle. We study auditor testing of revenues due to the concentration of frauds and restatements related to improper revenue recognition (e.g., [Beasley et al. 1999](#); [Wall Street Journal 2005](#)). Risk of misstatement for the client and reviewers’ current workload pressure (i.e., pressure relating to the amount of other work/engagements on which the auditor is currently working) are both manipulated between participants as high or low. These two factors are particularly relevant given recent changes to the regulatory environment (e.g., compliance with Section 404 of the Sarbanes-Oxley Act [SOX] and the acceleration of 10-K filings) that: (1) emphasize the auditor’s role in detecting control weaknesses, fraud, and errors, and (2) exacerbate traditional workload pressures during busy season ([McGee 2005](#); [Gullapalli 2005](#); [Lambert et al. 2009](#)). Further, recent PCAOB inspections have caused the board to note considerable tension in practice relating to these conflicting pressures: “In some cases, it appeared that the engagement partners had not devoted sufficient attention to their responsibilities, or their commitment to engagements did not appear to correlate with the risk that the engagements presented” ([PCAOB 2008](#), 20). After examining the case materials, the auditors were asked to indicate how they planned to conduct their reviews, either in person or electronically.

Our results indicate that risk of misstatement and workload pressure interact to affect participants’ review mode choices. We find that misstatement risk moderates the effect of workload pressure such that, when risk is high, the effect of workload pressure is effectively eliminated. That is, reviewers with hectic work schedules who face low misstatement risk are most likely to choose to review electronically. When risk is high, reviewers tend to employ in-person reviews regardless of workload pressures. Our results suggest that reviewers perceive electronic interaction to be a practicable way to cope with the increasing stress of workload pressure, but view face-to-face communication during review as more appropriate when the effectiveness of procedures is essential to ensure a high level of audit quality.

This study contributes to the literature by examining reviewers’ *choice* of review format. This choice is important to investigate given its implications for audit effectiveness and, in turn, financial statement quality (e.g., [Brazel et al. 2004](#); [Agoglia et al. 2009](#)). Prior research on the review process has considered the effects of accountability (e.g., [Johnson and Kaplan 1991](#); [Kennedy 1993](#); [Koonce et al. 1995](#); [Tan and Kao 1999](#)) and the effects of the review process such as different review formats ([Trotman and Yetman 1985](#); [Brazel et al. 2004](#); [Payne et al. 2010](#); [Agoglia et al. 2009](#)) or different reviewer ranks ([Ramsay 1994](#)). While a few studies have examined the antecedents to reviewer behavior (i.e., the choice of review format as a dependent variable), they do not identify factors which influence the choice of review *format* ([Gibbins and Trotman 2002](#); [Fargher et al. 2005](#)). In our study, we focus on how engagement management, who spend a substantial portion of their time reviewing, are handling the pressures of detecting material misstatements due to error or fraud, while at the same time managing more intensive workloads. Our results suggest they use review format as a means to mitigate these pressures. Encouragingly, their choice of review format appears to appropriately reflect client risk.

The remainder of this paper is organized as follows. The next section discusses background literature and reports the results of a survey. We then develop the hypotheses that we test experimentally. A discussion of the method and results of our experiment follows. The final section offers conclusions and implications.

BACKGROUND LITERATURE AND SURVEY

Alternative Modes of Review

While conducting financial statement audits, staff auditors generate workpapers describing the work performed, methods used, and conclusions drawn, which are subject to review by a supervising auditor (Emby and Gibbins 1988; Agoglia et al. 2003). The review process serves as a quality control, helping to ensure the adequateness of procedures performed, the appropriateness of conclusions drawn, and the reliability of the financial statements under audit (AICPA 1978). Given the significant resources devoted to review, firms have made an effort to streamline this process (Rich et al. 1997). Technological advancements such as electronic workpapers and electronic communication have provided reviewers with options regarding how they wish to conduct their reviews. With the switch to electronic workpapers and email, electronic review has become a mainstay for workpaper reviewers (Brazel et al. 2004). In contrast to in-person reviews, these electronic reviews typically involve the reviewer interacting with the preparer electronically to relay, discuss, and resolve review notes. The IFAC has acknowledged the increased use of alternative forms of review and, consequently, has advised that an integral part of audit planning is determining whether manager and partner reviews should occur at the client, offsite, or both (IFAC 2009).

Relative Advantages of Electronic and Face-to-Face Communication

Electronic communication and face-to-face communication offer different relative advantages. Face-to-face communication allows for synchronous interaction (and, in turn, the possibility of rich and detailed exchanges) between the relevant parties. It can also convey paraverbal and nonverbal aspects of communication such as facial expressions, body language, expressions of feelings and emotions, stuttering, and hesitated responses (Baltes et al. 2002; Brazel et al. 2004; Kock 2005). These sorts of paraverbal and nonverbal cues help to more fully convey the communicator's message (Daft et al. 1987; Nöteberg et al. 2003). As most of our communication with others is in person, we come to expect these elements in our interactions, making face-to-face a more natural medium of communication (Kock 2005). However, electronic communication is less bound by time and physical location, making collaboration between dispersed individuals more convenient and less expensive than traveling to meet face-to-face (Baltes et al. 2002; Murthy and Kerr 2004; Kock 2005). Similarly, in an audit context, electronic communication offers two key advantages to the reviewer: (1) it allows the reviewer to oversee multiple jobs concurrently (e.g., review multiple jobs in a single day), and (2) it reduces the time spent traveling between clients and the necessity to coordinate schedules with preparers (Shumate and Brooks 2001).

While these conveniences have helped make electronic communication (and electronic review) commonplace, there are questions as to whether its tradeoffs (e.g., rich, synchronous exchanges for greater convenience) result in decisions of similar quality to face-to-face interaction (e.g., Baltes et al. 2002). Recent research suggests that staff auditors prepare more effective workpapers and make higher quality judgments when expecting a face-to-face review of their work. Brazel et al. (2004) compare the judgments of auditors expecting in-person reviews (face-to-face preparers) with the judgments of auditors expecting electronic reviews (e-review preparers). They find that face-to-face preparers are less likely to be influenced by prior year judgments (i.e., reduced anchoring) and provide higher quality judgments. This result is likely due to differing demands (e.g., demands relating to perceptions of accountability and synchronicity of communication) perceived by preparers in the two review conditions. Specifically, face-to-face preparers perceive greater demands, and thus spend more time and effort preparing their workpapers (i.e., are more effective but less efficient) than e-review preparers. Similarly, Payne et al. (2010) conclude that anticipation of face-to-face discussions during review leads to greater preparer focus on more cognitively demanding procedures and, in turn, better preparer performance than anti-

pation of a written review with no face-to-face discussion. Favere-Marchesi (2006) finds greater performance gains when in-person interaction occurs after the reviewer has completed his/her review (versus during the review). These findings suggest that preparers perceive reviews involving in-person (onsite) interaction with their reviewer as more demanding and therefore provide more pre-review cognitive effort.

Although the review method appears to affect staff auditors' processes and outputs, it is possible that the subsequent review mitigates any quality issues arising from differing review expectations. Agoglia et al. (2009) match staff auditors with reviewers, manipulating only the expectation of review mode between matched pairs (i.e., both staff and reviewers were aware of review conditions). Reviewers matched with staff expecting a face-to-face review made higher quality judgments than reviewers matched with staff expecting an electronic review. Further, their results suggest that reviewers are unable to recognize quality reductions under e-review and, consequently, do not compensate by generating more review notes or by having staff do more rework. Thus, the review itself does not appear to mitigate the audit quality effects documented by Brazel et al. (2004). The reviewer's choice of review mode, a variable found to influence audit effectiveness (e.g., Brazel et al. 2004; Payne et al. 2010), is therefore a critical decision. While we know much about the consequences of this decision, we know little about the factors that influence this important choice.

Fargher et al. (2005) is the lone prior study that has attempted to investigate a potential factor (i.e., reviewer rank) which might influence reviewer format choice. In their study, they ask auditors to consider, and provide information on, two recent engagements in which they reviewed workpapers. Their results suggest that (1) reviewers do not favor one form of review over others (e.g., face-to-face, written comments only), (2) their review choices tended to be consistent across the two engagements, and (3) these choices are not influenced by the rank of the reviewer.¹ Thus, the literature has yet to identify the contextual factors that influence this important choice.

In order for auditors to respond to contextual features of a task by altering their choice of review format, they must, *a priori*, perceive differences in the relative advantages and disadvantages of alternative modes of interacting (e.g., effectiveness versus convenience of communication), and we suspect that they will (Daft et al. 1987; Kock 2005). Specifically, we posit that reviewers perceive in-person interaction during review as more effective and electronic interaction as more convenient. However, such evidence is not established in the auditing literature. To assess this expectation, we conduct a survey of practicing auditors who routinely choose between alternative review modes.

Survey Examining Reviewer Perceptions and Preferences

Survey Participants

We surveyed practicing auditors to learn their beliefs about in-person and electronic communication during review.² Twenty-three audit managers and partners participated in our survey. Seventy-eight percent of survey participants were from international firms, while 22 percent were from large regional firms.³ All participants reported using both in-person and electronic reviews in

¹ Participants in Fargher et al. (2005) are government auditors, and thus their results may not generalize to auditors of public companies.

² An in-person review was defined as a review where the reviewer is in the same location as the staff member when transferring review notes, allowing for discussion of the review comments and audit work with these individuals. An electronic review was defined as a review where review comments are sent via email or some other form of electronic communication.

³ Our sample was obtained through contacts at the participating firms. There are no significant differences for any of the survey responses across participants' firm type.

practice, with participants indicating that, on average, they conduct approximately 48.9 percent of their reviews electronically and 51.1 percent in person. Further, no participant reported using a method other than in-person or electronic review.

Survey Results

The results of this survey are reported in Table 1. For purposes of the survey, we define an effective review as one that identifies inadequacies and weaknesses in the work performed by a preparer, and provides guidance to the preparer about how to remedy those inadequacies and weaknesses. We define a convenient review as one that minimizes reviewer workload pressures (e.g., eases scheduling issues, reduces reviewer travel time, permits review of multiple jobs concurrently or from a single location) (e.g., Brazel et al. 2004). We asked participants about their perceptions of the relative effectiveness and convenience of electronic and in-person reviews by presenting them with the prompt: “Compared to electronic reviews, I consider in-person reviews to be.” Participants recorded, on seven-point scales, their perceptions regarding review mode effectiveness (where 1 = “in-person reviews less effective,” 4 = “about the same,” and 7 = “in-person reviews more effective”) and convenience (where 1 = “in-person reviews less convenient,” 4 = “about the same,” and 7 = “in-person reviews more convenient”).

For the effectiveness question, the mean response was 5.61, which is different from the midpoint of 4 at $p = 0.050$. Further, 20 out of 23 (87.0 percent) participants indicated that they believe in-person reviews are more effective (i.e., indicated a response greater than the midpoint). A binomial test of this proportion suggests a significant reviewer perception of in-person reviews as more effective ($p < 0.001$). In contrast, participants tended to perceive electronic reviews as more convenient, with a mean response of 2.61 (different from the midpoint at $p = 0.066$). Additionally, 19 out of 23 (82.6 percent) participants indicated that they believe electronic reviews

TABLE 1
Reviewer Perceptions of Review Modes: Manager/Partner Survey Results
(n = 23)

Panel A: In-Person versus Electronic Review

Measure ^a	Mean	Std. Deviation	Difference from Middle of Scale	
			t-statistic	p-value
Relative Effectiveness	5.61	0.941	1.71	.050
Relative Convenience	2.61	0.891	1.56	.066

Panel B: Dichotomized Responses^b

	Count	Percentage	Binomial Test p-value ^c
In-Person Review More Effective	20	87.0%	<.001
Electronic Review More Convenient	19	82.6%	<.001

^a Relative Effectiveness (Convenience) is measured on a seven-point scale where 1 = In-person reviews less effective (convenient) and 7 = In-person reviews more effective (convenient), with the midpoint of 4 labeled “about the same.”

^b We interpret any value greater than the midpoint to mean that the participant perceived in-person review to be more effective (convenient). We interpret any value less than the midpoint to mean that the participant perceived electronic review to be more effective (convenient). Thus, these counts and percentages do not include responses at the midpoint.

^c These two-tailed tests of proportions assume that the random chance of “success” will be 3/7, rather than 50%, since the midpoint of the scale is not considered a success. A response is considered a success if it is on the predicted side of the scale (e.g., a response of 5, 6, or 7 if “in-person review” was expected).

are more convenient (i.e., indicated a response less than the midpoint). Again, a binomial test of this proportion suggests a significant perception of electronic reviews as more convenient ($p < 0.001$).⁴ Responses to open-ended questions support a deeper investigation of the two factors we choose to examine experimentally (i.e., misstatement risk and workload pressure) as potentially important influences on reviewers' choice of review mode. For example: 78 percent of participants stated that issues of timing and location affect their choice; 52 percent stated that multiple engagements increase the likelihood of choosing electronic review; 26 percent stated that more complicated/risky issues lead to increased likelihood of in-person reviews; 39 percent believe that in-person interaction allows for clearer communication and fewer mistakes.

HYPOTHESIS DEVELOPMENT

Risk and Review Mode Choice

Contextual and social factors (e.g., distance between communication partners, degree of interpersonal risk involved in the communication, and accountability to others) can influence the medium of communication chosen (Webster and Trevino 1995). As communication media have varying levels of social presence (e.g., degree of synchronicity and verbal/paraverbal cues), choice of medium may depend, in part, on the contextual/social factors of the particular task at hand. As our survey results suggest, one such factor may relate to the risk associated with the issue under discussion. For example, when a task carries greater risk, a medium with more social presence, such as face-to-face communication, is typically preferred (Nöteberg et al. 2003). Communication media with less social presence are more likely to result in message misinterpretation, and thus are often less desirable under conditions of heightened risk (Kock 2005).

We choose to investigate the relationship between misstatement risk and choice of review format because auditor risk assessments should have a primary effect on the conduct of the audit and, in turn, audit quality (AICPA 2006a, 2006b). Prior research indicates that auditors typically respond to heightened risk by increasing audit effort, with the expectation that this refocusing of effort will favorably influence audit effectiveness (e.g., Biggs et al. 1988; Mock and Wright 1993; Bell et al. 1994; Davidson and Gist 1996; Mueller and Anderson 2002; Allen et al. 2006). With respect to workpaper review, the professional literature suggests that reviewer effort should be allocated on the basis of risk associated with each area/account (e.g., Label and Arens 1984; AICPA 2006b).⁵ Consistent with this expectation, prior research demonstrates that review efforts (e.g., reperforming calculations or reading versus skimming workpapers) are altered depending on the account being audited (e.g., accounts receivable versus prepaid rent) (Bamber and Bylinski 1987; Bamber and Ramsey 1988).

However, recent field research does not detect a direct relationship between client risks and the extent (i.e., hours allocated) of review (Gibbins and Trotman 2002; Fargher et al. 2005). Through the use of experimentation, we hope to better isolate, and potentially detect, a relationship between client risks and reviewer choices. Given that (1) the review process is a key way that managers/partners can influence audit quality, and (2) that it is where they spend a substantial portion of their time (Asare and McDaniel 1996), one might expect that they would alter the conduct of their reviews *in some way* to mitigate client risks and ensure an acceptable level of audit quality. Results of recent studies indicate that, for both preparers and their reviewers, chang-

⁴ It should be noted, however, that survey participants do not view electronic reviews as significantly more efficient (i.e., requiring fewer audit hours) than in-person reviews (mean = 4.04 on a similar seven-point scale, $p = 0.977$). Discussions with a small number of participants suggest that the advantage of electronic review is more one of convenience than efficiency.

⁵ Further, from an examination of one Big 4 audit firm's 2009 Audit Manual, it appears that firm policy on allocating review resources is largely based on account balance/audit area risk.

ing the mode of review represents a shift in focus as face-to-face review typically leads to higher quality judgments and greater effort/focus on relevant, current year evidence than electronic review (Brazel et al. 2004; Agoglia et al. 2009). Thus, if managers perceive in-person interaction as more effortful/effective, we would expect reviewers to be more likely to choose in-person reviews when the risk of misstatement is high (versus low) and the potential benefits of this increased effort are greatest. This leads to the following hypothesis:

H1: Reviewers will be more likely to review workpapers in person (as opposed to electronically) when risk of misstatement is high than when risk of misstatement is low.

Workload Pressure and Review Mode Choice

Another contextual factor that may affect an individual's choice of communication medium is the intensity of the individual's current workload (or "workload pressure"). Examining the effect of workload on audit decision making is particularly relevant given changes in the profession that have substantially increased the workload pressure placed on auditors (McGee 2005; Gullapalli 2005). First, the Sarbanes Oxley Act (U.S. House of Representatives 2002) and Auditing Standard No. 5 (PCAOB 2007) have expanded the audits of publicly traded corporations by including an attestation on the effectiveness of internal controls over financial reporting. Second, SEC Rules 33-8128 and 33-8644 substantially reduce the 10-K filing period for large accelerated and accelerated filers from 90 to 60 and 75 days, respectively, for fiscal years ending on or after December 15, 2006 (SEC 2002, 2005). For many auditors, this legislation has led to a truncation of the busy season, requiring them to manage more engagements contemporaneously (Lambert et al. 2009). Third, audit firms have expanded their audits to detect material misstatements due to fraud (AICPA 2002; Brazel et al. 2010), potentially compressing workloads even further.

In the wake of this increased regulation and oversight, the workload of auditors at large public accounting firms has increased dramatically. This has resulted in increased employee turnover and a greater strain placed on those with experience who remain (e.g., McGee 2005; Gullapalli 2005). A heavy workload can result in pressures that are independent of those produced through imposing time constraints, such as being overwhelmed by the feeling that there is just too much work to do, without concern for any specific deadlines or constraints (French and Caplan 1972; Sutherland and Cooper 1988; DeZoort and Lord 1997). However, similar to time pressure (e.g., McDaniel 1990; Solomon and Brown 1992; Choo 1995), workload pressure may affect how individuals conduct their work (DeZoort and Lord 1997). Prior archival research links high workload compression with lower quality audits, suggesting that the intense demands of the busy season can diminish employee performance (López and Peters 2009). The auditing profession has also expressed concerns about the effects of workload pressure and accelerated SEC filing deadlines on audit quality (see Gullapalli [2005] and Lambert et al. [2009] for discussions of these concerns).

As communication synchronicity and convenience varies with the medium, reviewers may have preferences for a particular mode of review depending on their current workloads. With high workload pressure (and competing client needs), managers may prefer electronic review as it allows them to move the engagement forward, yet still affords them the opportunity to address other tasks/engagements while awaiting the preparer's response. Further, an electronic review can be efficient in that it can save travel time to get to the client to interact with the preparer. Thus, when saddled with a heavy workload and many tasks requiring their attention, reviewers may attempt to relieve some of this pressure by choosing a more convenient review method, thereby increasing their preference for electronic reviews. This leads to the following hypothesis:

H2: Reviewers will be more likely to review workpapers electronically (as opposed to in person) when workload pressure is high than when workload pressure is low.

The Interactive Effect of Risk and Workload Pressure

Prior research suggests that, when under greater external pressures (e.g., fee pressure), auditors are more likely to reduce effort for low-risk tasks than for high-risk tasks (Houston 1999). Thus, it may be that risk and workload pressure have an interactive effect on a reviewer's choice of electronic versus face-to-face communication during review. If reviewers regard electronic review as less effective, they may be less willing to utilize it when the risk of misstatement is high, regardless of their workload pressures. Given the greater risk of litigation that goes along with a higher risk client, reviewers may choose to deal with high workload pressures by shifting their effort from less risky clients/tasks and devoting more attention to the high-risk client/task (Houston 1999). In contrast, reviewers may regard low-risk tasks as an opportunity for efficiencies, particularly during periods in which they have several other engagements/tasks to attend, and choose to communicate electronically when appropriate. Thus, we expect client risk and auditor workload pressure will interact to affect the reviewer's choice of review method. Specifically, auditors will be most likely to review electronically when confronted with a low-risk client *and* high workload pressure. Such a setting would be the most likely to provide the reviewer with the convenience benefits of electronic communication while minimizing the potential risk to the firm. We therefore test the following hypothesis:

- H3:** The difference between the likelihoods of reviewers choosing to review electronically under high and low workload pressure will be greater when the risk of misstatement is low than when the risk of misstatement is high.

EXPERIMENTAL METHOD

Participants

Participants were 60 practicing auditors from international, national, and large regional firms. Discussions with firm representatives revealed that auditors with less than four years audit experience are unlikely to commonly make the type of decision contemplated in our study. Thus, all participants had at least four years experience. They were primarily managers (43 percent) and partners (50 percent) with an average of 14.5 years of experience.⁶ Participants were predominantly from international firms (90 percent) and had, on average, 325 professionals in their office. Participants served an average of 12 audit clients annually. There are no significant differences ($p > 0.20$) for participants across experimental conditions for any of the demographic measures (e.g., experience, position, use of review in practice, number of professionals in office, audit/review clients served each year, and firm type).

Experimental Task and Procedure

Participants were provided with a case which placed them in the role of reviewer on a hypothetical audit engagement of a publicly traded company. The case materials included background information on the client, along with audited prior year and unaudited current year financial information. Participants were asked to assume that they are planning the year-end audit work for the sales and collection cycle and were informed that interim audit work, including all necessary tests of controls, had already been performed. Results of these tests were provided along with evidence regarding misstatement risk for the cycle and information about their current workload (the manipulations, discussed below). After examining the case materials, participants then indicated the likelihood that they would review their staff member's testing in person versus elec-

⁶ Four participants were "heavy" seniors with significant review responsibilities. Results are unaffected by the removal of these less experienced participants.

tronically. Because prior research has found that preparer competence and familiarity with the preparer can affect reviewer behavior (e.g., [Asare and McDaniel 1996](#)), all participants were told that the preparer was qualified, competent, and not a member of the engagement team in the prior year. Participants then answered a series of case-related and demographic questions, including manipulation checks.

Independent Variables

Two independent variables (risk of misstatement and workload pressure) were manipulated between participants resulting in a 2×2 complete factorial design. Similar to previous studies of audit-related risks (e.g., [Glover et al. 2008](#)), risk of misstatement was manipulated as low or high. In the low-risk condition, risk assessments (and supporting documentation) provided to participants indicated that inherent risk and control risk were assessed as low in both the current and prior years. In the high-risk condition, inherent and control risks were both assessed as high in the current and prior years, and supporting documentation reflected these assessments. Supporting documentation for risk assessments included, for example, evidence relating to the number of nonroutine transactions, stock option plans, and control activities. Workload pressure was also manipulated as low or high. Participants in the low-pressure condition were informed that they would be concurrently serving as engagement manager/partner on two other engagements. In order to help create the impression that their schedules are less hectic, low-pressure participants were also told that, at other times of the year, they may be “juggling as many as ten clients at a time.” Conversely, to create the impression of a more hectic schedule, participants in the high-pressure condition were informed that they would be concurrently serving on nine other engagements and that, at other times of the year, they may be “be serving as engagement manager/partner on as few as three clients at a time.”⁷ Participants were randomly assigned to one of the four treatment groups.

RESULTS

Results relating to our three hypotheses are analyzed within a 2×2 ANOVA framework (risk of misstatement by workload pressure), with review mode likelihood decisions serving as the dependent variable. Due to the directional nature of expectations, all tests of hypotheses are one-tailed. Manipulation checks for both independent variables indicate that participants generally understood the manipulations.⁸

Risk of Misstatement

Hypothesis 1 predicts that reviewers will be more likely to review workpapers in person when risk is high than when risk is low. Participants recorded their review mode likelihood judgments on a ten-point scale (where 1 = “I would definitely do an in-person review” and 10 = “I would definitely do an electronic review”).⁹ Table 2 reports ANOVA results using participants’ responses

⁷ Discussions with audit partners and managers indicate that two (nine) other engagements represent relatively low (high) workload pressure. While indications are that the manipulation of workload pressure was successful, it is possible these two workload conditions could be viewed as having similar time pressures under certain circumstances. For example, three large clients could require similar reviewer time as ten smaller clients. However, based on our discussions with audit partners and managers, the latter case is “more hectic,” suggesting greater workload pressure.

⁸ For misstatement risk, two participants in the low-risk condition indicated that they perceived both inherent and control risk as moderate (none considered risk high). All participants in the high-risk condition indicated that they perceived inherent and control risk to be high. For workload pressure, two participants in the low-pressure condition indicated that they perceived their workload pressure to be high. Again, all participants in the high-pressure condition indicated a perception that their workload was high. Removing participants who did not respond to the manipulation checks as intended does not affect the conclusions drawn.

⁹ Consistent with prior research investigating dichotomous choices (e.g., [Wilks 2002](#); [Bhojraj and Libby 2005](#); [Carpenter](#)

TABLE 2
Review Mode Likelihood Judgment^a
(n = 60)

Panel A: ANOVA Results

<u>Independent Variable</u>	<u>df</u>	<u>F-statistic</u>	<u>p-value^b</u>
<i>Risk of Misstatement</i>	1	14.23	.001
<i>Workload Pressure</i>	1	8.80	.002
Interaction	1	5.32	.012

Panel B: Mean (Standard Deviation)^c

	<u>Low Workload Pressure</u>	<u>High Workload Pressure</u>	<u>Row Means</u>
Low Risk	3.26 (1.58)	5.67 (2.32)	4.47
High Risk	2.60 (1.84)	2.90 (1.07)	2.75
Column Means	2.93	4.28	

^a Review Mode Likelihood Judgment relates to participants' preferences to review their preparers in-person or electronically. On a ten-point scale, participants indicated whether they were more likely to review the preparer "in-person (i.e., allowing for face-to-face interaction and discussion of review notes) or electronically (i.e., sending the comments and notes via email or some other form of electronic communication)," with a response of 1 labeled "I would definitely do an in-person review" and a response of 10 labeled "I will definitely do an electronic review."

^b p-values are based on one-tailed tests since expectations were directional.

^c For all cells (1–4), n = 15.

on this scale as the dependent variable. Results demonstrate that the misstatement risk manipulation significantly affects review mode judgments ($F = 14.23$, $p = 0.001$). Consistent with H1, reviewers in the high misstatement risk condition indicated a greater likelihood of reviewing in person than those in the low misstatement risk condition (means = 2.75 and 4.47, respectively). In addition, we dichotomize reviewers' responses at the midpoint as a measure of the *practical* significance of their review mode choice. Results with the dichotomized dependent variable reveal that 40.0 percent of participants in the low-risk condition chose electronic review, while only 3.3 percent of participants in the high-risk condition chose electronic review ($p = 0.002$; Table 3). While these results provide support for H1, interpretation of this main effect should be considered in light of the interaction discussed below.

Workload Pressure

Hypothesis 2 predicts that reviewers will be more likely to review electronically when workload pressure is high than when it is low. ANOVA results reveal a significant main effect of workload pressure on the review mode likelihood judgments ($F = 8.80$, $p = 0.002$; Table 2). Consistent with H2, we find that the means are lower in the low workload pressure condition than in the high workload pressure condition (means = 2.93 and 4.28, respectively). Results are similar when reviewers' review mode judgments are dichotomized, with 10.0 percent of participants in the

2007), we use a likelihood scale to record participant responses. A likelihood scale allows for greater variability in participant responses and the use of more powerful statistical analyses. Further, it does not preclude dichotomization of responses (i.e., responses can be dichotomized based on which choice a participant is likely to make). However, it is important to remember when interpreting our results that these do, in fact, represent likelihoods of utilizing a particular review method and that participants are not required to definitively decide which review method they will use.

TABLE 3
Review Mode Choice^a
(n = 60)

Panel A: Fisher's Exact Test Results				
Independent Variable				p-value^b
<i>Risk of Misstatement</i>				.002
<i>Workload Pressure</i>				.030
<i>Interaction</i>				.005

Panel B: Percent Choosing Electronic Review^c			
	Low Workload Pressure	High Workload Pressure	Row Means
Low Risk	13.3%	66.7%	40.0%
High Risk	6.7%	0.0%	3.3%
Column Means	10.0%	33.3%	

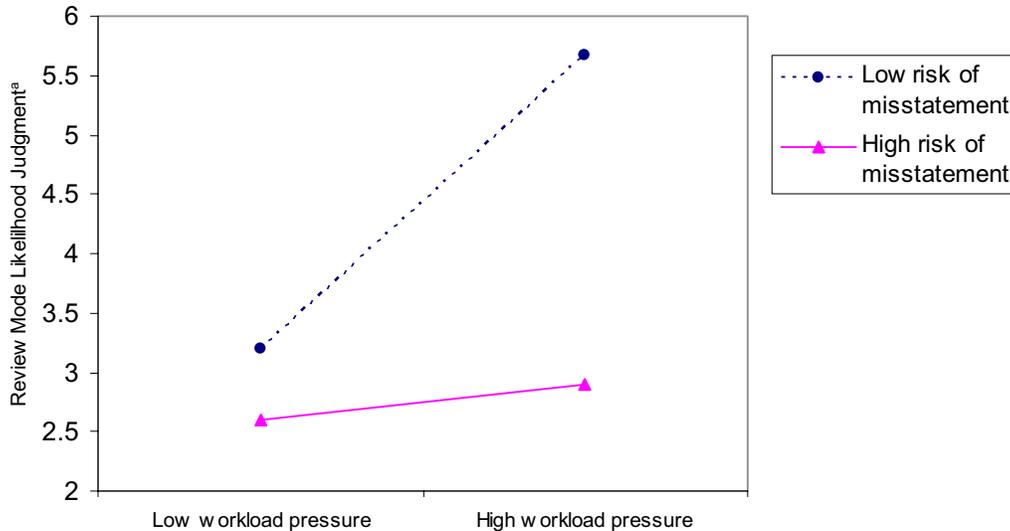
^a Review Mode Choice represents the percentage of people choosing to review the work paper electronically (determined by dichotomizing the ten-point scale at the midpoint).
^b p-values are based on one-tailed tests since expectations were directional. Inferences are unchanged if ANOVA is used.
^c For all cells (1–4), n = 15.

low workload pressure condition choosing electronic review and 33.3 percent of participants in the high workload pressure condition choosing electronic review ($p = 0.03$; Table 3). Again, interpretation of this main effect should be considered in light of the interaction discussed below.

Interactive Effect of Misstatement Risk and Workload Pressure

While results regarding the main effect hypotheses (H1 and H2) are significant, they need to be viewed in the context of the interaction results (H3). Hypothesis 3 predicts that risk of misstatement and workload pressure will have an interactive effect on how reviewers choose to conduct their reviews. Specifically, H3 predicts that misstatement risk will moderate the effect of workload pressure such that, when risk is high, the effect of workload pressure is reduced. Results of the ANOVA presented in Table 2 indicate a significant interactive effect of risk and pressure on participants' review mode likelihood judgments ($F = 5.32$, $p = 0.012$). The cell means presented in Panel B of Table 2 and Figure 1 demonstrate the nature of this moderating relationship. While high workload pressure increases the likelihood that reviewers will choose to communicate electronically with their preparers during review, this effect is less when the risk of misstatement is high than when it is low. Results are similar for the risk/workload pressure interaction when reviewers' review mode judgments are dichotomized, with participants in low-risk/high workload pressure condition choosing electronic review 66.7 percent of the time, while all other participants (i.e., those in the other three cells combined) chose electronic review 8.9 percent of the time ($p = 0.005$; Table 3). These results provide support for H3. It is important to note that the main effects found in the testing of H1 and H2 appear to be largely due to Cell 2, in which reviewers face a heavy workload and low misstatement risk. Specifically, reviewers are most likely to choose to review electronically when their work schedules are hectic *and* the client's risk of misstatement is low.

FIGURE 1
Effect of Misstatement Risk and Workload Pressure on Review Mode Likelihood Judgment^a



^a *Review Mode Likelihood Judgment* relates to participants' preferences to review their preparers in person or electronically. On a ten-point scale, participants indicated whether they were more likely to review the preparer "in-person (i.e., allowing for face-to-face interaction and discussion of review notes) or electronically (i.e., sending the comments and notes via email or some other form of electronic communication)," with a response of 1 labeled "I would definitely do an in-person review" and a response of 10 labeled "I will definitely do an electronic review."

DISCUSSION AND CONCLUDING REMARKS

Changes in the technological environment in which audits are conducted have increased reviewers' options of how to interact with their audit teams. Reliance on electronic workpapers, as well as the use of electronic communication between audit team members, has the potential to streamline the audit process (e.g., [Baltés et al. 2002](#); [Agoglia et al. 2009](#)). Prior research indicates that in-person (or face-to-face) reviews bring to bear different environmental pressures on preparers than electronic reviews, which can result in higher audit quality ([Brazel et al. 2004](#); [Agoglia et al. 2009](#)). As reviewers typically have a great deal of discretion over how to conduct their reviews, the choice of review format should be appropriately viewed as a controllable audit input. Utilizing both a survey and an experiment, our study extends the literature by examining reviewers' choice of review mode and by considering factors that influence that choice. Importantly, we study how audit partners and managers vary the conduct of their reviews to cope with the conflicting pressures of detecting misstatements and balancing client workloads.

Results of our survey suggest that reviewers view in-person interaction during review as more effective and electronic interaction as more convenient. In addition, reviewers report that they use electronic and in-person communication for roughly an equal proportion of their reviews. Results of our experiment indicate that risk of misstatement and workload pressure interact to affect participants' review mode choices. Specifically, we find that misstatement risk moderates the

effect of workload pressure such that, when risk is high, the effect of workload pressure is effectively eliminated. These findings suggest that reviewers perceive reviews involving face-to-face interaction to be more appropriate when effectiveness of procedures is essential to ensure an acceptable level of audit quality and, when risk conditions allow, consider electronic review to be a practicable way to cope with workload pressures associated with a hectic client schedule. Given our survey and experimental results, we conclude that reviewers will choose to sacrifice convenience when higher risk calls for employing a more effective review format. It is important to note that, while recent field research has failed to find a direct link between client risk and the *extent* of review (e.g., Gibbins and Trotman 2002; Fargher et al. 2005), we document a relationship between risk and review *format*. Therefore, we are able to shed light on how auditors are concurrently reacting to the pressures of client risk and balancing a portfolio of clients while maintaining audit quality.

Our findings have implications for both practice and future research. For example, the PCAOB (2008) has raised questions about (1) the thoroughness with which engagement managers and partners review audit documentation, and (2) the extent to which their attention to engagements reflects audit-related risks. Further, the IFAC (2009) has acknowledged that reviewers in today's audit environment have alternative ways in which to conduct their reviews, and prior research suggests that the choice of review format has implications for audit quality (e.g., Brazel et al. 2004; Payne et al. 2010; Agoglia et al. 2009). The results presented here advance our understanding of the factors that influence this choice. Our findings provide insight to firms, regulators, and inspectors regarding the impact of workload pressure and misstatement risk on how audit managers and partners conduct their reviews. These issues are increasingly relevant given recent changes to the regulatory environment (e.g., Section 404 compliance, Statement on Auditing Standards No. 99, and the acceleration of 10-K filings) that emphasize the auditor's role in detecting control weaknesses/fraud/errors and exacerbate traditional workload pressures during busy times of the year (McGee 2005; Gullapalli 2005). Given the recent, dramatic changes to the audit landscape, future studies could examine other ways that audit teams are currently balancing the conflicting pressures of effectiveness, convenience, and efficiency (e.g., through the use of forensic specialists, outsourcing less risky audit tasks). While we examine two factors that can influence the review mode choice, future research could investigate other factors that affect this choice and its resulting implications for audit quality. Further, as we investigate the review mode choice in only a single setting, it may be useful for future research to investigate this choice in other settings (e.g., settings that may be expected to result in greater or lesser use of electronic review) in order to increase the generalizability of our findings. Such research will further our understanding of the factors that influence the choice of review format, as well as the impact of this important choice on audit quality.

REFERENCES

- Agoglia, C. P., T. Kida, and D. M. Hanno. 2003. The effects of alternative justification memos on the judgments of audit reviewees and reviewers. *Journal of Accounting Research* 41 (1): 33–46.
- , R. C. Hatfield, and J. F. Brazel. 2009. The effects of audit review format on review team judgments. *Auditing: A Journal of Practice & Theory* 28 (1): 95–111.
- Allen, R. D., D. R. Hermanson, T. M. Kozloski, and R. J. Ramsay. 2006. Auditor risk assessment: Insights from the academic literature. *Accounting Horizons* 20 (2): 157–178.
- American Institute of Certified Public Accountants (AICPA). 1978. *Planning and Supervision*. Statement on Auditing Standards No. 22. New York, NY: AICPA.
- . 2002. *Consideration of Fraud in Financial Statements*. Statement on Auditing Standards No. 99. New York, NY: AICPA.

- . 2006a. *Audit Risk and Materiality in Conducting an Audit*. Statement on Auditing Standards No. 107. New York, NY: AICPA.
- . 2006b. *Performing Audit Procedures in Response to Assessed Risks and Evaluating the Audit Evidence Obtained*. Statement on Auditing Standards No. 110. New York, NY: AICPA.
- Asare, S. K., and L. McDaniel. 1996. The effect of familiarity with the preparer and task complexity on the effectiveness of the audit review process. *The Accounting Review* 71 (2): 139–159.
- Ball, R. 2008. What is the actual economic role of financial reporting? *Accounting Horizons* 22 (4): 427–432.
- Baltes, B. B., M. W. Dickson, M. P. Sherman, C. C. Bauer, and J. S. LaGanke. 2002. Computer-mediated communication and group decision making: A meta-analysis. *Organizational Behavior and Human Decision Processes* 87 (1): 156–179.
- Bamber, E. M., and J. H. Bylinski. 1987. The effects of the planning memorandum, time pressure, and individual auditor characteristics on audit managers' review time judgments. *Contemporary Accounting Research* 4 (1): 127–143.
- , and R. Ramsey. 1988. A descriptive study of audit managers' working paper review. *Auditing: A Journal of Practice & Theory* 7: 137–149.
- Beasley, M., J. Carcello, and D. Hermanson. 1999. *Fraudulent Financial Reporting: 1987–1997, An Analysis of U.S. Public Companies*. Committee of Sponsoring Organizations of the Treadway Commission. Jersey City, NJ: AICPA.
- Bell, T., W. R. Knechel, and J. Willingham. 1994. *An Exploratory Analysis of the Determinants of Audit Engagement Resource Allocations*. Proceedings of Deloitte & Touche/University of Kansas Symposium on Auditing Problems: 49–67. Lawrence, KS: University of Kansas.
- Bhojraj, S., and R. Libby. 2005. Capital market pressure, disclosure frequency-induced earnings/cash flow conflict, and managerial myopia. *The Accounting Review* 80 (1): 1–20.
- Biggs, S. F., T. J. Mock, and P. R. Watkins. 1988. Auditors' use of analytical review in audit program design. *The Accounting Review* 63 (1): 148–161.
- Brazel, J. F., C. P. Agoglia, and R. C. Hatfield. 2004. Electronic versus face-to-face review: The effects of alternative forms of review on auditors' performance. *The Accounting Review* 79 (4): 949–966.
- , T. D. Carpenter, and J. G. Jenkins. 2010. Auditors' use of brainstorming in the consideration of fraud: Reports from the field. *The Accounting Review* (forthcoming).
- Carpenter, T. D. 2007. audit team brainstorming, fraud risk identification, and fraud risk assessment: Implications of SAS No. 99. *The Accounting Review* 82 (5): 1119–1140.
- Choo, F. 1995. Auditors' judgment performance under stress: A test of the predicted relationship by three theoretical models. *Journal of Accounting, Auditing & Finance* 10 (3): 611–641.
- Commission of the European Communities. 2006. *Directive 2006/43/EC of the European Parliament and of the Council on Statutory Audit of Annual Accounts and Consolidated Accounts, Amending Council Directives 78/660/EEC and 83/349/EEC and Repealing Council Directive 84/253/EEC*. Brussels, Belgium: CEC.
- Daft, R. L., R. H. Lengel, and L. K. Trevino. 1987. Message equivocality, media selection, and manager performance: Implications for information systems. *Management Information Systems Quarterly* 11 (3): 354–366.
- Davidson, R., and W. Gist. 1996. Empirical evidence on the functional relation between audit planning and total audit effort. *Journal of Accounting Research* 34 (1): 111–124.
- DeZoort, F. T., and A. T. Lord. 1997. Review and synthesis of pressure effects research in accounting. *Journal of Accounting Literature* 16: 28–85.
- Emby, C., and M. Gibbins. 1988. Good judgment in public accounting: Quality and justification. *Contemporary Accounting Research* 4: 287–313.
- Fargher, N. L., D. Mayorga, and K. T. Trotman. 2005. A field-based analysis of audit workpaper review. *Auditing: A Journal of Practice & Theory* 24 (2): 85–110.
- Favere-Marchesi, M. 2006. Audit review: The impact of discussion timing and familiarity. *Behavioral Research in Accounting* 18: 53–64.
- French, J. R., and R. D. Caplan. 1972. Organizational stress and individual strain. In *The Failure of Success*, edited by Marrow, A. J., 30–66. New York, NY: AMACOM.

- Gibbins, M., and K. T. Trotman. 2002. Audit review: Managers' interpersonal expectations and conduct of the review. *Contemporary Accounting Research* 19 (3): 411–444.
- Glover, S., D. Prawitt, and D. Wood. 2008. Internal audit sourcing arrangement and the external auditor's reliance decision. *Contemporary Accounting Research* 25 (1): 193–213.
- Gullapalli, D. 2005. Take this job and ... file it. Burdened by extra work created by the Sarbanes-Oxley Act, CPAs leave the Big Four for a better life. *Wall Street Journal*: C1. Available at: <http://www.dzhphillips.com/inc/wsj-article.pdf>.
- Houston, R. W. 1999. The effects of fee pressure and client risk on audit seniors' time budget decisions. *Auditing: A Journal of Practice & Theory* 18 (2): 70–86.
- International Federation of Accountants (IFAC). 2009. *Planning an Audit of Financial Statements*. International Standard on Auditing 300 (Revised). New York, NY: IFAC.
- Johnson, V. E., and S. E. Kaplan. 1991. Experimental evidence on the effects of accountability on auditor judgments. *Auditing: A Journal of Practice & Theory* 10 (Supplement): 96–107.
- Kennedy, J. 1993. Debiasing audit judgment with accountability: A framework and experimental results. *Journal of Accounting Research* 31 (2): 231–245.
- Kock, N. 2005. Media richness or media naturalness? The evolution of our biological communication apparatus and its influence on our behavior toward e-communication tools. *IEEE Transactions on Professional Communication* 48 (2): 117–130.
- Koonce, L., U. Anderson, and G. Marchant. 1995. Justification of decisions in auditing. *Journal of Accounting Research* 33 (2): 369–384.
- Label, W., and A. Arens. 1984. Guidelines for more effective workpaper review. *Practical Accountant* 17: 49–54.
- Lambert, T. A., J. F. Brazel, and K. L. Jones. 2009. Unintended consequences of accelerated filings: Are mandatory reductions in audit delay associated with reductions in earnings quality? Working paper, University of Massachusetts.
- López, D. M., and G. F. Peters. 2009. The effect of workload compression on audit quality. Working paper, The University of Texas at San Antonio.
- McDaniel, L. 1990. The effects of time pressure and audit program structure on audit performance. *Journal of Accounting Research* 28 (2): 267–285.
- McGee, S. 2005. CPA recruitment intensifies as accounting rules evolve. *Wall Street Journal* (March 22): B6.
- Mock, T. J., and A. Wright. 1993. An exploratory study of auditors' evidential planning judgments. *Auditing: A Journal of Practice & Theory* 12 (2): 39–61.
- Mueller, J. M., and J. C. Anderson. 2002. Decision aids for generating analytical review alternatives: The impact of goal framing and audit-risk level. *Behavioral Research in Accounting* 14: 157–177.
- Murthy, U. S., and D. S. Kerr. 2004. Comparing audit team effectiveness via alternative modes of computer-mediated communication. *Auditing: A Journal of Practice & Theory* 23 (1): 141–152.
- Nöteberg, A., T. L. Benford, and J. E. Hunton. 2003. Matching electronic communication media and audit tasks. *International Journal of Accounting Information Systems* 4: 27–55.
- Payne, E. A., R. J. Ramsay, and E. M. Bamber. 2010. The Effect of Alternative Types of Review on Auditors' Procedures and Performance. *Auditing: A Journal of Practice & Theory* 29 (1): 207–220.
- Public Company Accounting Oversight Board (PCAOB). 2007. *An Audit of Internal Control over Financial Reporting that is Integrated with an Audit of Financial Statements*. Auditing Standard No. 5. Washington, D.C.: PCAOB.
- . 2008. *Report on the PCAOB's 2004, 2005, 2006, and 2007 Inspections of Domestic Annually Inspected Firms*. Washington, D.C.: PCAOB.
- Ramsay, R. J. 1994. Senior/manager differences in audit workpaper review performance. *Journal of Accounting Research* 32 (1): 127–135.
- Rich, J. S., I. Solomon, and K. T. Trotman. 1997. The audit review process: A characterization from the persuasion perspective. *Accounting, Organizations and Society* 22 (5): 481–505.
- Securities and Exchange Commission (SEC). 2002. *Acceleration of Periodic Report Filing Dates and Disclosure Concerning Website Access to Reports*. Release No. 33-8128. Washington, D.C.: SEC.
- . 2005. *Revisions to Accelerated Deadlines for Filing Periodic Reports*. Release No. 33-8644. Washington, D.C.: SEC.

- Shumate, J. R., and R. C. Brooks. 2001. The effect of technology on auditing in government: A discussion of the paperless audit. *The Journal of Government Financial Management* 50 (2): 50–55.
- Solomon, I., and C. Brown. 1992. Auditors' judgments and decisions under time pressure: An illustration and agenda for research. In *Proceedings of the 1992 Deloitte & Touche/University of Kansas Symposium on Audit Problems*, edited by Srivastava, R. Lawrence, KS: The University of Kansas.
- Sutherland, V. J., and C. L. Cooper. 1988. Sources of work stress. In *Occupational Stress: Issues and Developments in Research*, edited by Hurrell, J., Jr., L. Murphy, S. Sauter, and C. L. Cooper, 3–40. New York, NY: Taylor and Francis.
- Tan, H., and A. Kao. 1999. Accountability effects on auditors' performance: The influence of knowledge, problem-solving ability, and task complexity. *Journal of Accounting Research* 37 (1): 209–223.
- Trotman, K. T. 1985. The review process and the accuracy of auditor judgments. *Journal of Accounting Research* 23 (2): 740–752.
- , and P. W. Yetman. 1985. The effect of the review process on auditor judgments. *Journal of Accounting Research* 23 (1): 256–267.
- U.S. House of Representatives. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H. R. 3763]. Washington, D.C.: Government Printing Office.
- Wall Street Journal*. 2005. To err is human, to restate financials, divine: Companies redo reports in record numbers, partly due to Sarbanes-Oxley. (January 20).
- Webster, J., and L. K. Trevino. 1995. Rational and social theories as complementary explanations of communication media choices: Two policy-capturing studies. *Academy of Management Journal* 38 (6): 1544–1572.
- Wilks, T. J. 2002. Predecisional distortion of evidence as a consequence of real-time audit review. *The Accounting Review* 77 (1): 51–71.