



To what extent does internal control effectiveness increase the value of internal evidence?

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Abstract

Purpose – This research seeks to examine whether two relevant characteristics, source objectivity and internal control effectiveness, influence how auditors evaluate evidence items supporting accounting estimates.

Design/methodology/approach – A controlled experiment approach with a sample of 24 auditors from one large international firm.

Findings – Results indicate that effective internal controls reduce the impact of relying on internal as opposed to external evidence items. Results also suggest that auditors place reliance on internal control effectiveness when they evaluate external evidence items.

Practical implications – Recent professional trends, such as the demand for faster financial reporting, put pressure on auditors to rely on internal rather than more persuasive external evidence items. Relying on less persuasive evidence items reduces audit effectiveness. Auditors may respond by examining a second evidence characteristic; US audit standards suggest evaluating internal control effectiveness if evidence was generated from internal (i.e. client) sources. Thus, this study explores whether internal control effectiveness reduces the impact of relying on evidence items with lower source objectivity.

Originality/value – Prior research has concentrated on examining the impact of a change in one evidence characteristic on audit judgment; this study expands the understanding of the evidence evaluation process by exploring how auditors evaluate multiple evidence characteristics. Furthermore, as suggested by Bonner, this research identifies an audit judgment deficiency (i.e. reliance on less persuasive internal evidence due to the demand for faster financial reporting) and examines one potential remedy (i.e. consideration of internal control effectiveness).

Keywords Evidence evaluation, Accounting estimates, Timely reporting, Source objectivity

Paper type Research paper

Introduction

Evaluating audit evidence items requires significant judgment since evidence is often persuasive rather than convincing (AICPA, 2007, AU 326.22). Many sufficiency and

This paper is based on dissertation research conducted at the University of Iowa. The author thanks the members of the dissertation committee: Albert Schepanski (Co-chair), Richard Tubbs (Co-chair), Lynn Pringle, Lola Lopes, and Chuleeporn Changchit for their invaluable guidance and support. She also appreciates the helpful comments of Paul Caster, Richard Chesley, William Dilla, Phillip Dixon, Rebekah Heath, Cynthia Jeffrey, Sue Ravenscroft, Brad Tuttle, and workshop participants at the University of Iowa, Iowa State University, 2001 Central States Accounting Research Workshop, 2002 American Accounting Association (AAA) Annual Meeting, and 2002 AAA Auditing Section Midyear Meeting Roundtable. Finally, the author gratefully acknowledges the assistance of Pooja Arora, Sarah Erdmann, Suzanne Kelsey, Allan Trapp, Pat Wagaman, and the study participants.

Data is available from the author upon written request.



competence characteristics influence how auditors evaluate the persuasiveness (i.e. degree to which auditors are convinced that the evidence accumulated supports the audit objective (Arens and Loebbecke, 2000, p. 203)) of individual evidence items. Prior research has generally concentrated on understanding how variation in individual evidence characteristics, such as source objectivity, evidence set composition, or internal control effectiveness, impacts auditor judgment (Bamber, 1983; Holstrum and Mock, 1985; Moeckel, 1991; Hirst, 1994). However, auditors are often influenced by multiple characteristics when evaluating an evidence item (Caster and Pincus, 1996; Goodwin, 1999). For example, an evidence item, such as a report on the client's major delinquent customer, may vary in both source objectivity (e.g. internal evidence prepared by audit client vs external evidence provided by independent credit bureau) and internal control effectiveness (e.g. weak vs strong)[1].

Few prior studies examine whether and how changes in multiple evidence characteristics impact auditor judgment (Goodwin, 1999). If auditors do not properly adjust how they evaluate evidence persuasiveness to reflect changes in multiple characteristics, judgment deficiencies (i.e. judgment performances that need improvement, Bonner (1999)) may occur. Weber (1999, p. 849) summarizes the state of audit evidence evaluation research as follows:

In spite of substantial research, we are only just beginning to understand how the various pieces (e.g. characteristics) of evidence that auditors collect should be weighted and combined to make the decision and the types of judgment pitfalls they must seek to avoid.

Professional trends, particularly the demand for faster reporting of financial information as suggested by Securities Exchange Commission's (SEC) recent reporting period change[2], put pressure on auditors to rely on internal rather than more persuasive external evidence items (CICA, 1999; Bierstaker *et al.*, 2001; Helms, 2002; Hunton *et al.*, 2003; LeGrand, 2002; SEC, 2002, 2005). Since, research suggests that audit judgments are sensitive to changes in source objectivity (Hirst, 1994; Reimers and Fennema, 1999), relying on less persuasive internal evidence items may reduce audit effectiveness. While gathering additional evidence items through substantive testing is one response to lower source objectivity, this may not be practical due to client use of highly complex computerized financial systems (Cohen *et al.*, 2003), or the subjective nature of the estimation process (Ramos, 1998). An alternate response is to examine a second characteristic of the current evidence item; specifically, US audit standards suggest evaluating internal control effectiveness when the evidence item is generated from internal (i.e. client) sources.

Using the judgment formation model developed by Mautz and Sharaf (1961) as a theoretical framework, this study hypothesizes that auditors will evaluate the persuasiveness of internal evidence items generated under strong internal controls similar to that of external evidence items, thus reducing the impact of lower source objectivity on evidence persuasiveness. Prior research has not examined the joint effects of internal control effectiveness and source objectivity on evidence persuasiveness. If internal control effectiveness is found to reduce the impact of lower source objectivity on evidence persuasiveness, concerns about the ability to conduct effective audits with fewer external evidence items will be diminished. In contrast, if the hypothesized interaction is not found, auditors may be forced to gather additional evidence items unless researchers can show that another characteristic(s) of the existing evidence item reduces the impact of lower source objectivity on evidence persuasiveness.

Accounts involving estimates provide a useful context to examine the interaction between source objectivity and internal control effectiveness since they pose greater risks than do accounts consisting of relatively routine, factual data (Lundholm, 1999; AICPA, 2007, AU 342; IAASB, 2004a). Both US and international audit standards recommend auditors consider evidence characteristics, such as source objectivity and internal control effectiveness, when evaluating accounting estimates (AICPA, 2007, AU 342; IAASB, 2004b). To increase construct validity and broaden generalizability, this paper examines two estimation accounts identified in both US and international audit standards: the allowance for doubtful accounts and the provision for product warranty claims (AICPA, 2007, AU 342.02; IAASB, 2004a). The allowance for doubtful accounts task is an integral part of most audits and has been tested in previous research (Joyce and Biddle, 1981; Bamber, 1983; Hirst, 1994; Reimers and Fennema, 1999). In contrast, although audit standards have identified the provision for product warranty claims task as a potential accounting estimation risk, this task has received little research attention (Ramos, 1998; AICPA, 2007, AU 342; IAASB, 2004a).

This research is important to both academicians and practitioners. First, since most evidence items that auditors evaluate have multiple characteristics, it is important for researchers to understand how variation in multiple characteristics of each evidence item impacts audit judgment (Bonner, 1999). This is critical in situations where externally imposed changes, such as recent professional trends, lower the persuasiveness of individual evidence item characteristics (Bonner, 1999; Elliott, 2001; Kinney, 2001). If auditors fail to adequately adjust how they evaluate the persuasiveness of individual evidence items to reflect these changes, audit effectiveness concerns exist. Second, accounting estimates have recently received significant attention from regulators and standard setters given that:

- estimates are subjective; and
- managers may use estimates to manage earnings (Levitt, 1998; Ramos, 1998; AICPA, 1999; Kinney, 2001).

This study extends prior estimation research by examining how two evidence characteristics, source objectivity and internal control effectiveness, impact one task tested in prior research, the allowance for doubtful accounts task, and one task where little prior research exists, the provision for product warranty claims task. Finally, the demand for faster financial reporting without sacrificing audit quality is growing (Botosan and Harris, 2000; Ettredge *et al.*, 2000; FASB, 2000, 2001, 2006; Searcy *et al.*, 2003). This research provides practitioners, regulators, and standard setters with a better understanding of how two potential consequences of the demand for faster financial reporting, that is lower source objectivity and increased emphasis on internal control effectiveness, impact audit judgment.

Participants evaluated the likelihood that two financial statement accounts involving estimates are fairly stated (i.e. not materially misstated). Source objectivity (internal vs external) and internal control effectiveness (strong vs weak) evidence characteristics were manipulated. Results indicate that effective internal controls reduce the impact on evidence persuasiveness of using internal as opposed to external evidence items. These results hold for both tasks. Results also suggest that auditors place reliance on internal control effectiveness when they evaluate external evidence items. This finding, discussed in more detail in the concluding remarks, is unexpected since, by definition, a client's internal control system does not generate external evidence items.

This paper proceeds as follows. The next section discusses the evidence evaluation process and presents the hypothesis. The third section describes the experimental methods. The fourth section summarizes the experimental results. The final section concludes the paper by discussing theoretical implications and issues for future research.

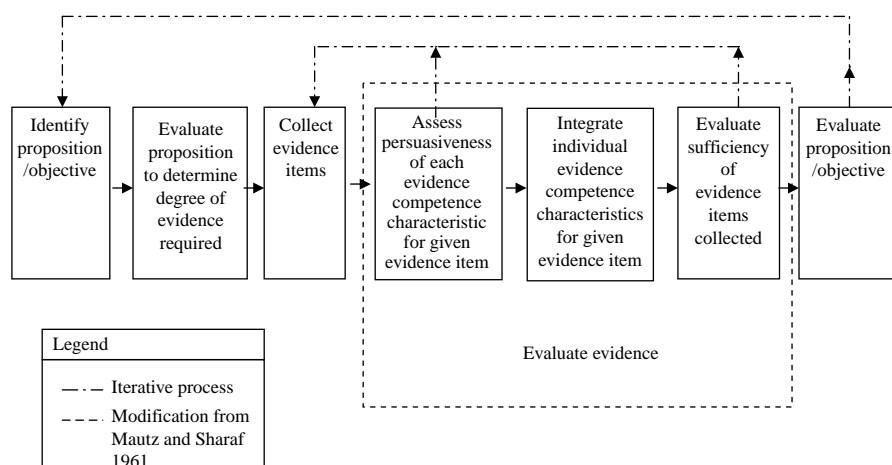
Background and hypothesis

Accounting estimates and the evidence evaluation process

Many judgments require auditors to evaluate evidence items based on past events, or hard evidence (Ramos, 1998, p. 31). However, accounting estimates require auditors to evaluate qualitatively different evidence items that are generally persuasive, rather than convincing, in nature (Ramos, 1998; AICPA, 2007, AU 326.22; IAASB, 2004a, b). These evidence items are known as soft evidence (Ramos, 1998, p. 3).

Several judgment and decision-making theories have been used to examine how auditors evaluate evidence items. Many of these theories such as the belief adjustment model (Hogarth and Einhorn, 1992) are not applicable here since they require determining prior posteriors that auditors use when evaluating accounting estimates. Since, I am unaware of any accounting estimate research that has identified these prior posteriors, this work incorporates the judgment formation process model developed by Mautz and Sharaf (1961, p. 103) (Figure 1) to illustrate how auditors evaluate the persuasiveness of evidence items supporting accounting estimates. First, auditors identify the proposition to be proved. Second, auditors evaluate the proposition to determine if it requires evidence items of a high or moderate degree of probability. Third, auditors collect individual evidence items within the given limits of time and cost. Fourth, auditors evaluate each evidence item as valid or not valid. Finally, auditors make a judgment on the proposition[3].

This paper concentrates on the fourth stage, evidence evaluation. Evidence evaluation involves “diagnostic inference processes that are often complex and hierarchical in nature” (Holstrum and Mock, 1985, p. 105). Causal inference modeling



Adapted from Mautz and Sharaf, 1961. *The Philosophy of Auditing*. American Accounting Association.

Figure 1.
Judgment formation process

and discussions with practitioners suggest that evidence evaluation consists of three parts. First, auditors assess how each competence characteristic of an individual evidence item impacts their evaluation of the item's persuasiveness. Assume the proposition of interest is the assertion that the allowance for doubtful accounts is fairly stated (i.e. not materially misstated). One important characteristic of evidence items supporting this assertion is source objectivity[4]. Auditors view an evidence item obtained from client management as less persuasive than an evidence item provided by an independent credit agency (Caster and Pincus, 1996). This illustrates how lower source objectivity impacts evidence persuasiveness.

Second, auditors integrate the various competence characteristics for each evidence item. Persuasion researchers (Petty and Cacioppo, 1981, 1984, 1986; O'Keefe, 2002; Perloff, 2003) propose that when individuals are both motivated by direct personal involvement and have the ability to think the issue through carefully, they will consider relevant evidence characteristics (i.e. use cognitive elaboration). Given professional ethics and the subjectivity of accounting estimates, prior research argues that auditors take evidence evaluation seriously and use cognitive elaboration in all but trivial judgments (Rich *et al.*, 1997; Goodwin, 1999). This suggests that auditors will carefully integrate the various competence characteristics for each evidence item. For example, if the evidence item obtained from client management was produced by effective internal controls, auditors should evaluate its persuasiveness as higher than if the internally generated evidence item was produced in an environment with ineffective internal controls. Thus, internal control effectiveness reduces auditors' evidence persuasiveness concerns due to lower source objectivity.

Third, auditors determine if the existing evidence set (i.e. all evidence items evaluated to date) is sufficient to evaluate the proposition of interest. If not, auditors collect and evaluate additional evidence items.

Source objectivity

US standards indicate that auditors should assign greater persuasiveness to external rather than internal evidence items since a third party either initiated or reviewed the external evidence items (AICPA, 2007, AU 326.21). However, source objectivity may be compromised if faster reporting is demanded and pressure for timely audit opinion signoffs increases (SEC, 2002, 2005). In an environment with significant pressure to work more quickly and do less extensive substantive testing, auditors will be unable to examine evidence items from external parties if there are any delays in obtaining responses to requests (CICA, 1999; Helms, 2002)[5]. Thus, auditors must rely on less persuasive internal evidence items. Prior research suggests that auditors, consistent with US audit standards, generally view external evidence items as more persuasive than internal evidence items (Joyce and Biddle, 1981, experiment 3b; Knechel and Messier, 1990; Hirst, 1994; Caster and Pincus, 1996).

Internal control effectiveness

Recent professional trends have increased the importance of internal control cues in evidence evaluation (AICPA, 2001; Bell *et al.*, 1997; CICA, 1999; O'Donnell *et al.*, 2000; Bierstaker and Wright, 2004; PCAOB, 2004). Effective internal controls are important to ensure accurate timely reporting (JWG Report, 2000) and facilitate continuous auditing (CICA, 1999; Kogan *et al.*, 1999; Greenstein and Vasarhelyi, 2002).

Prior research indicates that auditors generally view evidence items generated by strong internal controls as more persuasive than evidence items generated by weak internal controls (Cohen and Kida, 1989; Maletta and Kida, 1993; Asare and Davidson, 1995; Marden *et al.*, 1997).

Relationship between source objectivity and internal control effectiveness

US auditing standards suggest that source objectivity and internal control effectiveness are not mutually exclusive characteristics, rather they interact (AICPA, 2007, AU 326.21). The new US audit risk standards explicitly states:

The persuasiveness of audit evidence items is influenced by their source and by its nature and is dependent on the individual circumstances under which it is obtained ... Audit evidence items that are generated internally are more reliable when the related controls imposed by the client are effective (AICPA, 2006, SAS 106 paragraph 8, emphasis added).

Internal evidence items generated by strong client internal controls are persuasive. In contrast, by definition, a client's internal control system does not generate external evidence items. Thus, the persuasiveness of external evidence items should be independent of client internal control effectiveness. Of interest in this study is whether auditors evaluate the persuasiveness of internal evidence generated by strong client internal controls similar to that of external evidence. Thus, the predicted interaction between source objectivity and internal control effectiveness, stated in null form, can be summarized as:

- H1.* Internally generated evidence in a strong internal control environment will produce likelihood judgments that are significantly different from those produced by externally generated evidence.

Figure 2 shows the prediction for *H1*.

Method

Participants

Participants were 24 auditors from one national accounting firm. The experimental instrument was distributed by a firm audit partner and returned directly to the researcher.

Given the subjective nature of accounting estimates, the experimental tasks required auditors with substantial experience. Firm representatives recommended that participants have at least three years of experience for the experimental tasks. Since, the participating firm has a high-employee retention rate and encourages its most experienced auditors to evaluate accounting estimates, participants' average audit experience of 10.6 years is higher than that reported in other evidence evaluation studies. Participants included seniors, managers, and partners. Responses were compared across job titles. No statistically significant differences were found.

The tasks assume control risk is assessed to be less than maximum. Data from the post-questionnaire shows all, but one participant had assessed control risk to be less than maximum for at least one audit[6]. Thus, the participants should have previously considered internal control effectiveness as a factor when evaluating evidence in practice.

Panel A: predicted effect of source objectivity^a and internal control effectiveness^b on evidence persuasiveness

Internal Control Effectiveness	Source Objectivity	
	Internal	External
Weak	Cell A	Cell C
Strong	Cell B	Cell D

H1: $\mu(\text{cell B}) \neq \text{marginal mean } (\mu(\text{cell D}) + \mu(\text{cell C}))$

^a Source objectivity is manipulated at two levels: internal evidence vs external evidence.

^b Internal control effectiveness is manipulated at two levels: weak vs strong.

^c μ represents mean persuasiveness.

Panel B: graph of predicted interaction between source objectivity and internal control effectiveness

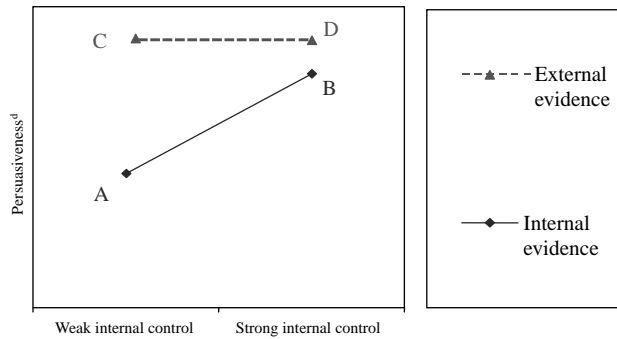


Figure 2.
Predicted effect of source objectivity and internal control effectiveness on evidence persuasiveness

^d Since the underlying theoretical construct of interest, evidence persuasiveness, is unobservable, the measured dependent variable represents the observable outcome of the judgment formation process.

Task development and experimental procedures

To increase construct validity and broaden the study’s external generalizability, two estimation tasks identified in US and international standards were used. Following audit standards, recent research, and business press attention, these tasks involved asset and liability accounts that require significant estimation judgment (AICPA, 2007, AU 560.11; Quintanilla, 1998; Ramos, 1998; Schmitt, 1998; Beasley *et al.*, 1999; IAASB, 2004a). Both tasks address valuation and completeness assertions and include non-quantified evidence[7].

The first task, evaluating the allowance for doubtful accounts, has been examined in prior source objectivity research (Joyce and Biddle, 1981; Bamber, 1983; Hirst, 1994; Caster and Pincus, 1996; Reimers and Fennema, 1999). The task scenario was developed by modifying prior materials (Joyce and Biddle, 1981; Hirst, 1994; Reimers and Fennema, 1999).

Although often identified by audit standards as a potential significant estimation risk task, the second task, the provision for product warranty claims, has not been tested in prior evidence evaluation work. The task scenario was developed by conducting a detailed task analysis (Bonner, 1999) that included interviewing accounting managers from multinational firms with significant product warranty liabilities and auditors with experience evaluating product warranty liabilities.

Both task scenarios were designed to reflect general audit procedures as opposed to specific procedures such as inspection or recalculation. This reduces the concern that the scenarios test differences in audit procedures rather than differences in evidence characteristics. All materials were pre-tested on graduate business students with significant prior auditing experience and on auditors from the firm providing participants to ensure better construct validity. Pre-test auditor participants averaged 4.5 years of auditing experience and all had assessed control risk to be less than maximum for at least one audit.

Participants first reviewed common background information and then examined individual treatment scenarios. For each scenario, participants assessed the probability that the account is correctly stated (i.e. not materially misstated). All treatment stimuli were designed so that the more persuasive evidence (as indicated by the high level of each independent variable) increased the likelihood that the account is correctly stated (i.e. not materially misstated). The order of the treatments was randomly varied between participants to control for order effects.

Design and independent variables

This experiment employed a within-subjects design to control for individual participant differences and increase statistical power. Some researchers argue that within-subjects design increases the possibility of demand effects (i.e. participants form a hypothesis regarding the purpose of the experiment and then respond in a manner that leads to biases interpretation of the manipulated treatment variables (Schepanski *et al.*, 1992)). Several steps were taken to reduce the probability of demand effects. First, multiple variables (internal control effectiveness and either source objectivity or subsequent event evidence) were manipulated from trial to trial for a given participant. Second, no cues as the direction of the hypothesis were provided. Third, participants were professional auditors rather than students since auditors typically have higher prior knowledge and stronger prior opinions. Fourth, the experimental instrument did not collect participant names and all instruments were returned directly to the researcher to increase task anonymity. Fifth, participants completed the instrument in their offices rather than in a laboratory to reduce the adoption of participant roles. Finally, to reduce any suggestions that the researcher was a person of high status over the participants, the instrument cover letter emphasized that the researcher's goal was to obtain insights from participants regarding audit judgments.

Two factors related to this study were manipulated: source objectivity, and internal control effectiveness[8]. Source objectivity was manipulated at two levels:

- (1) presence of internal historical[9] evidence proxies for low-source objectivity; and
- (2) presence of external historical evidence represents high-source objectivity.

Internal control effectiveness was manipulated at two levels: weak and strong. Appendix 1 and 2 illustrate the source objectivity and internal control effectiveness manipulations used in this study.

Each participant examined four treatment scenarios for each task related to this research:

- (1) weak internal controls/internal historical evidence;
- (2) strong internal controls/internal historical evidence;
- (3) weak internal controls/external evidence; and
- (4) strong internal controls/external evidence[10].

To monitor internal consistency, participants viewed randomly selected scenarios twice. Statistical analysis indicates participants responded consistently.

Dependent variable

One surrogate was used for evidence persuasiveness for both tasks: the likelihood that the account is fairly stated (i.e. not materially misstated)[11]. Since, the underlying theoretical construct of interest, evidence persuasiveness, is unobservable, the measured dependent variable represents the observable outcome of the judgment formation process.

Experimental results

First, to determine whether participants' perceptions of evidence characteristics agreed with those of the experimenter, participants evaluated the competence of the evidence stimulus in the post-experiment questionnaire[12]. For source objectivity, participants rated which source they believed would provide more competent evidence on a scale of 0 – client management to 10 – external party with five serving as the neutral point of indifference. Participants rated the internal control effectiveness of each scenario on a 0 – very weak to 10 – very strong scale.

Results of a paired *t*-test comparing participant rating to the point of indifference for the allowance for doubtful accounts task indicate that participants assigned higher competence ratings to external evidence stimuli than to internal evidence stimuli (mean = 8.00; $t = 11.99$; $p < 0.0001$). A paired *t*-test comparing participant ratings for the allowance for doubtful accounts internal control scenarios indicates that participants rated the strong internal control scenario (mean = 8.09) significantly higher than the weak internal control scenario (mean = 2.17; $t = 17.13$; $p < 0.0001$).

Similar results were found for the provision for product warranty claims task. Specifically, auditors assigned higher competence ratings to external evidence stimuli than to internal evidence (mean = 8.13; $t = 13.91$; $p < 0.0001$). Similarly, the internal control effectiveness manipulation was effective ($t = 14.26$, $p < 0.0001$) as participants assigned higher ratings to the strong internal control scenario (mean = 7.65) than to the weak internal control scenario (mean = 2.61).

Tests of hypothesis for allowance for doubtful accounts task

Means of likelihood that account is fairly stated for each condition, shown in Panel A of Figure 3, suggest that participants assigned higher likelihoods to internal evidence generated with strong internal controls (mean = 70.00 percent) and external evidence associated with strong internal controls (mean = 78.33 percent).

To analyze the participants' judgments, a one way ANOVA with planned linear contrasts was used. As shown in Figure 3, the one way ANOVA was significant ($F = 57.84, p < 0.0001$)[13]. To examine whether participants viewed the persuasiveness of internal evidence generated in a strong internal control environment similar to external evidence, four planned contrasts were run. First, as shown in Panel C of Figure 3, weak internal controls/internal evidence (i.e. cell A) was compared to the marginal mean of the external evidence (i.e. cells C and D). Results indicate that participants assigned lower ratings to weak controls/internal evidence than to external evidence ($F = 95.68, p < 0.0001$)[14]. Second, a planned contrast comparing internal evidence generated under strong internal controls (i.e. cell B) with the marginal mean of the external evidence (i.e. cells C and D) shows no statistically significant difference in ratings ($F = 1.26, p = 1.0000$). Third, a planned contrast between internal evidence generated under strong internal controls (i.e. cell B) and external evidence with weak internal controls (i.e. cell C) suggests that participants view internal evidence generated under strong internal controls higher than external evidence with weak control internals ($F = 22.29, p < 0.0001$). Finally, a planned contrast between internal evidence generated under strong internal controls (i.e. cell B) and external evidence with strong internal controls (i.e. cell D) finds that participants view internal evidence generated within a strong internal control environment less persuasive than external evidence generated within a strong internal control environment ($F = 7.71, p = 0.0284$). The final two contrasts suggest that auditors place reliance on internal control effectiveness when they evaluate external evidence items. This finding is unexpected since the client's internal control system does not generate external evidence.

Tests of hypothesis for provision for product warranty claims task

The provision for product warranty claims task was designed to improve construct validity and to examine the generalizability of the finding that internal control effectiveness reduces the impact of low-source objectivity to a less-tested estimation task.

Means of likelihood that account is fairly stated for each condition, shown in Panel A of Figure 4, suggest that participants assigned higher likelihoods to internal evidence generated with strong internal controls (mean = 48.75 percent) and external evidence associated with strong internal controls (mean = 53.75 percent).

To analyze the participants' judgments, a one way ANOVA with planned linear contrasts was used. As shown in Figure 3, the one way ANOVA was significant ($F = 30.87, p < 0.0001$)[15]. To examine whether participants viewed the persuasiveness of internal evidence generated in a strong internal control environment similar to external evidence, four planned contrasts were run. First, as shown in Panel C of Figure 3, weak internal controls/internal evidence (i.e. cell A) was compared to the marginal mean of the external evidence (i.e. cells C and D). Results indicate that participants assigned lower ratings to weak internal controls/internal evidence than to external evidence ($F = 54.44, p < 0.0001$). Second, a planned contrast

Panel A: means of likelihood account is fairly stated (standard deviation) n = 24

Internal control effectiveness (ics)	Source objectivity	
	Internal	External
Weak	Cell A 41.67 % (18.57)	Cell C 55.83 % (21.65)
	Cell B 70.00 % (13.51)	Cell D 78.33 % (14.35)
Marginal mean	55.83%	67.08%
Difference in means	28.33%	22.50%

Panel B: one way ANOVA

Source of variation	Type III sum of squares	df	Mean square	F	Sig. of F
Source objectivity * internal control effectiveness	1.8746	3	0.6249	57.84	< 0.0001
Subject	2.0196	23	0.0878	8.13	< 0.0001
Error	0.7454	69	0.0108		

Panel C: planned contrasts (includes Bonferroni adjustment)

	df	F	Sig. of F
Weak ics internal / mean external	69	95.68	< 0.0001
Strong ics internal / mean external	69	1.26	1.0000
Strong ics internal / weak external	69	22.29	< 0.0001
Strong ics internal / strong external	69	7.71	0.0284

Panel D: graph of interaction predicted by H1

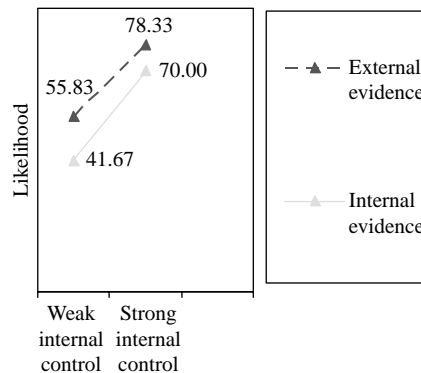


Figure 3.
Analysis of likelihood allowance for doubtful accounts is fairly stated

Panel A: means of likelihood account is fairly stated (standard deviation) n = 24

Internal Control Effectiveness (ics)	Source Objectivity	
	Internal	External
Weak	Cell A 27.08 % (19.67)	Cell C 38.75 % (20.07)
Strong	Cell B 48.75 % (21.33)	Cell D 53.75 % (29.28)
Marginal mean	37.92%	46.25%
Difference in means	21.67%	15.00%

Panel B: one way ANOVA

Source of variation	Type III sum of squares	df	Mean square	F	Sig. of F
Source objectivity * internal control effectiveness	1.0000	3	0.3333	30.87	< 0.0001
Subject	3.2133	23	0.1397	12.94	< 0.0001
Error	0.7450	69	0.0108		

Panel C: planned contrasts (includes Bonferroni adjustment)

	df	F	Sig. of F
Weak ics internal / mean external	69	54.44	< 0.0001
Strong ics internal / mean external	69	0.93	1.0000
Strong ics internal / weak external	69	11.11	0.0056
Strong ics internal / strong external	69	2.78	0.4004

Panel D: graph of interaction predicted by H1

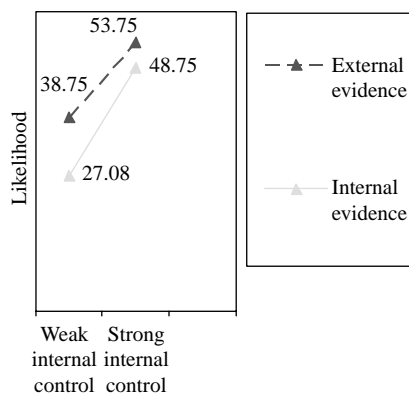


Figure 4. Analysis of likelihood provision for product warranty claims account is fairly stated

comparing internal evidence generated under strong internal controls (i.e. cell B) with the marginal mean of the external evidence (i.e. cells C and D) shows no statistically significant difference in ratings ($F = 0.93$, $p = 1.0000$). Third, a planned contrast between internal evidence generated under strong internal controls (i.e. cell B) and external evidence with weak internal controls (i.e. cell C) suggests that participants view internal evidence generated under strong internal controls higher than external evidence with weak internal controls ($F = 11.11$, $p < 0.0001$). Finally, a planned contrast between internal evidence generated under strong internal controls (i.e. cell B) and external evidence with strong internal controls (i.e. cell D) finds that participants view internal evidence generated within a strong internal control environment similar to external evidence generated within a strong internal control environment ($F = 2.28$, $p = 0.4004$). Results from the final two contrasts suggest that auditors place reliance on internal control effectiveness when they evaluate external evidence items. Similar to the allowance for doubtful accounts results, this finding is unexpected since the client's internal control system does not generate external evidence items.

Summary of results

Results from both tasks suggest that the effect of internal control effectiveness on evidence persuasiveness is greater for internal rather than external evidence items. Specifically, auditors appear to view the persuasiveness of internal evidence items produced under strong internal controls as similar to that of external evidence items. This finding has interesting implications in the present audit environment with its increased pressure on auditors to rely on internal rather than more persuasive external evidence items.

Discussion

Auditors evaluate evidence items that are persuasive, not convincing, throughout the audit process (AICPA, 2007, AU 326.22). This study examines how auditors use source objectivity and internal control effectiveness cues when evaluating the persuasiveness of evidence items supporting accounting estimates. Results suggest that effective internal controls reduce the impact of relying on internal as opposed to more persuasive external evidence items when auditors evaluate allowance for doubtful accounts and provision for product warranty claims estimates.

By definition, a client's internal control system does not generate external evidence items. Thus, internal control effectiveness should not influence how auditors evaluate external evidence items. However, results indicate that auditors do rely on internal control effectiveness when they evaluate external evidence items. This judgment pattern raises audit effectiveness and efficiency concerns. When auditors allow strong internal control effectiveness to influence their evaluation of external evidence persuasiveness, audit effectiveness may be reduced. Future research could identify intervention mechanisms to reduce auditor overreliance on internal control effectiveness when they evaluate external evidence items. Audit efficiency problems may exist if auditors place less reliance on external evidence items when internal control effectiveness is low. However, one may argue that auditors are interpreting low-internal control effectiveness as a control environment problem, and therefore view any evidence items, regardless of the objectivity of their source, with skepticism. In addition, one may argue that whether an account is misstated is just one judgment

that the auditor makes, so the judgment on the financial statements overall or on the way the company operates may be entering the picture. Future research is needed to determine whether this judgment pattern is driven by such skepticism or by other variables.

Limitations

This study is subject to several limitations that provide direction for future research. First, concerns about task and assertion generalization exist. Auditors must evaluate the persuasiveness of evidence items related to accounting estimates throughout the audit process (e.g. before accepting a new client (Johnstone, 2000), when making audit planning decisions (Bedard *et al.*, 1999), and when evaluating account balances (Caster and Pincus, 1996)). This study examines tasks that evaluate account balances and address valuation and completeness assertions. Participants assigned lower likelihood account is fairly stated ratings to the provision for product warranty claims task. Furthermore, this research examines situations where the more persuasive evidence suggests no material misstatement. Thus, results do not generalize to other audit task, assertions, or situations where the more persuasive evidence points to material misstatements without further investigation. Also, future research could investigate why participants assigned higher likelihood ratings to the allowance for doubtful accounts task.

Second, participants from only one accounting firm were used to reduce the potential that firm policy and training differences may impact results. This also limits the generalizability of study results. Further research could examine whether firm policies and training affect the interaction found between source objectivity and internal control effectiveness.

Third, this study uses a within-subjects design to control for individual participant differences and increase statistical power. However, as noted earlier, a within-subjects design increases the potential for demand effects (i.e. participants reacting as required by auditing standards). A within-subjects design may generate demand effects if participants:

- encode the demand cues;
- discern the true experimental hypothesis; and
- act on the hypothesis (Schepanski *et al.*, 1992).

As discussed earlier, several steps were taken to reduce the possibility of demand effects. These steps appear to be effective as results indicate that, in contrast to US standards, auditors place greater reliance that warranted on internal control effectiveness when they evaluate external evidence items.

Fourth, although our pre-test participants indicated that the difference in client credit policy between the allowance for doubtful accounts task treatment scenarios reflected changes in internal control effectiveness only, some researchers may argue that this difference may alter two constructs – internal control effectiveness and client business risk. Future research could examine whether the unexpected result that auditors rely on internal control effectiveness when evaluating external evidence may be due to client business risk cues rather than internal control effectiveness cues.

Finally, this study examines non-quantified evidence items. Prior research finds that quantification enhances persuasion (Kadous *et al.*, 2005; Anderson *et al.*, 2004). Future research could explore whether results generalize to quantified evidence items.

Conclusion

An important goal of current audit research is to obtain an understanding of how auditors evaluate evidence items (Weber, 1999, p. 849). Prior research concentrates on understanding how variation in one evidence characteristic impacts auditor judgment. However, auditors generally evaluate individual evidence items that contain multiple characteristics (Caster and Pincus, 1996; Goodwin, 1999). This research extends prior work by examining how variation in two characteristics, specifically source objectivity and internal control effectiveness, impacts how auditors evaluate the persuasiveness of individual evidence items. Recent professional trends, particularly the demand for faster financial reporting and pressure for timely audit opinion signoffs, lower the persuasiveness of individual evidence items. Given the desire within the profession to improve audit judgment, understanding whether a weakness in one evidence characteristic can be reduced by the strength of another characteristic is a noteworthy research goal (Bonner, 1999).

Notes

1. Source objectivity can be defined as “the likelihood an individual will report his measurement or interpretation truthfully, regardless of its accuracy” (Hirst, 1994, p. 114). Internal control effectiveness refers to the degree in which internal controls operate effectively or productively (Arens *et al.*, 2006).
2. Hunton *et al.* (2003) suggest that currently, the accounting profession is not responding rapidly to the demands from business firms and the SEC for faster reporting. They fear that if the accounting profession continues to lag in its response, information users will seek relevant, decision-making information from alternative sources (Hunton *et al.*, 2003, p. 14).
3. The judgment formation process is iterative. If either the competence of an individual evidence item is questionable or the evidence set is insufficient, auditors collect additional evidence items. In addition, if the valid evidence items acquired disconfirm the proposition, auditors repeat the entire process beginning with identifying a new proposition to prove. The iterative feature of the judgment formation process is shown in Figure 1 by a dotted line.
4. This example assumes auditors evaluate source objectivity before internal control effectiveness. However, some auditors may evaluate internal control effectiveness before source objectivity. I was unable to determine prior posteriors (i.e. apply a Bayesian evidence evaluation approach) since I could not find accounting estimation research that identifies the order in which auditors evaluate source objectivity and internal control effectiveness. Discussions with several practitioners from three Big 4 firms and one national firm indicated that there is no consistent order; some auditors evaluate source objectivity first; others evaluate internal control effectiveness.
5. The auditor may be able to gather external evidence items electronically from third parties with a well-established relationship to the client (CICA, 1999). However, if the client establishes a significant relationship with a new customer or supplier today, the auditor may not be able to implement secure electronic communication with this external party before an audited report upon demand is requested.
6. Excluding this participant from the analysis, the conclusions remain unchanged.
7. Evidence items supporting accounting estimates may be either non-quantified or quantified (Ramos, 1998). This study examines non-quantified evidence items since its objective is to explore the impact of changes in source objectivity and internal control effectiveness on audit judgment. Future research could examine whether quantification, the process of

assigning numbers to events and analyzing the numbers to reach a conclusion about each alternative, influences how auditors evaluate evidence persuasiveness (Kadous *et al.*, 2005).

8. Since, the demand for faster financial reporting may shorten the post-report-date collection period, this experiment also included an exploratory study of the impact of the presence (or absence) of subsequent event evidence items (i.e. evidence generated after the report date) on evidence persuasiveness. The impact of subsequent event evidence items on evidence persuasiveness is examined in a separate study.
9. Historical evidence refers to evidence items about events that occurred before or at period-end.
10. Participants also examined two treatment scenarios for each task related to subsequent event evidence: (1) weak internal controls/internal subsequent event evidence; and (2) strong internal controls/internal subsequent event evidence. As noted in an earlier footnote, the impact of subsequent event evidence items on evidence persuasiveness is examined in a separate study.
11. Participants also estimated the percent of the material overdue account that should be included in the allowance for doubtful accounts balance. The second allowance for doubtful accounts dependent variable was used to increase construct validity (Campbell and Fiske, 1959; Cook and Campbell, 1979) and to enhance comparability with prior source objectivity research (Joyce and Biddle, 1981; Hirst, 1994; Reimers and Fennema, 1999). Results for the percent dependent variable were similar to the reported likelihood results.
12. Based upon the third standard of field work, two categories of evidence characteristics exist: competence and sufficiency (Arens *et al.*, 2006; Messier *et al.*, 2006; AICPA, 2007, AU 150.02). Since, source objectivity is a competence characteristic (Arens *et al.*, 2006, 164-165; Messier *et al.*, 2006, p. 139), the manipulation check was worded "evaluate the competence of evidence stimulus" rather than "evaluate the persuasiveness of evidence stimulus."
13. Consistent with prior research (Joyce and Biddle, 1981; Hirst, 1994; Reimers and Fennema, 1999), participants place greater emphasis on external rather than internal evidence items ($F = 11.98, p < 0.0001$). In addition, consistent with prior internal control research (Cohen and Kida, 1989; Maletta and Kida, 1993; Asare and Davidson, 1995; Marden *et al.*, 1997), participants placed greater emphasis on evidence produced under strong rather than weak internal controls ($F = 5.30, p < 0.0001$).
14. To reduce family-wise Type I risk concerns, Bonferroni adjustments were made.
15. Consistent with prior research (Joyce and Biddle, 1981; Hirst, 1994; Reimers and Fennema, 1999), participants found external evidence to be more persuasive than internal evidence ($F = 15.44, p < 0.0001$). Furthermore, consistent with prior internal control research (Cohen and Kida, 1989; Maletta and Kida, 1993; Asare and Davidson, 1995; Marden *et al.*, 1997) participants viewed evidence generated with strong rather than weak internal controls as more persuasive ($F = 74.71, p < 0.0001$).

References

- AICPA (1999), *Horizons for the Auditing Standards Board Strategic Initiatives Toward the Twenty-First Century*, American Institute of Certified Public Accountants – AICPA, New York, NY, available at: www.aicpa.org
- AICPA (2001), *Statement on Auditing Standards No. 94, The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit*, American Institute of Certified Public Accountants – AICPA, New York, NY.
- AICPA (2006), *Statement on Auditing Standards No. 106, Audit Evidence*, American Institute of Certified Public Accountants – AICPA, New York, NY.

- AICPA (2007), *AICPA Professional Standards*, Vol. 1, American Institute of Certified Public Accountants – AICPA, New York, NY.
- Anderson, U., Kadous, K. and Koonce, L. (2004), “The role of incentives to manage earnings and quantification in auditors’ evaluations of management-provided information”, *Auditing: A Journal of Practice & Theory*, Vol. 23 No. 1, pp. 11-27.
- Arens, A.A. and Loebbecke, J.K. (2000), *Auditing and Assurance Services: An Integrated Approach: Eighth Edition*, Prentice-Hall, Upper Saddle River, NJ.
- Arens, A.A., Elder, R.J. and Beasley, M.S. (2006), *Auditing and Assurance Services: An Integrated Approach: Eleventh Edition*, Prentice-Hall, Upper Saddle River, NJ.
- Asare, S. and Davidson, R. (1995), “Expectation of errors in unaudited book values: the effect of control procedures and financial condition”, *Auditing: A Journal of Practice & Theory*, Vol. 14 No. 1, pp. 1-28.
- Bamber, E.M. (1983), “Expert judgment in the audit team: a source reliability approach”, *Journal of Accounting Research*, Vol. 21 No. 2, pp. 396-412.
- Beasley, M.S., Carcello, J.V. and Hermanson, D.R. (1999), *Fraudulent Financial Reporting: 1987-1997, An Analysis of U.S. Public Companies*, COSO, New York, NY.
- Bedard, J.C., Mock, T.J. and Wright, A.M. (1999), “Evidential planning in auditing: a review of the empirical research”, *Journal of Accounting Literature*, Vol. 18, pp. 96-142.
- Bell, T., Marrs, R., Solomon, I. and Thomas, H. (1997), *Auditing Organizations Through a Strategic-Systems Lens*, KPMG Peat Marwick LLP, Minneapolis, MN.
- Bierstaker, J.L. and Wright, A. (2004), “Does the adoption of a business risk audit approach change internal control documentation and testing practices?”, *International Journal of Auditing*, Vol. 8 No. 1, pp. 67-78.
- Bierstaker, J.L., Burnaby, P. and Thibodeau, J. (2001), “The impact of information technology on the audit process: an assessment of the state of the art and implications for the future”, *Managerial Auditing Journal*, Vol. 16 No. 3, pp. 159-64.
- Bonner, S.E. (1999), “Judgment and decision-making research in accounting”, *Accounting Horizons*, Vol. 13 No. 4, pp. 385-98.
- Botosan, C.A. and Harris, M.S. (2000), “Motivations for a change in disclosure frequency and its consequences: an examination of voluntary quarterly segment disclosures”, *Journal of Accounting Research*, Vol. 38 No. 2, pp. 329-53.
- Campbell, D. and Fiske, D. (1959), “Convergent and discriminant validation by the multitrait-multimethod matrix”, *Psychological Bulletin*, Vol. 56 No. 2, pp. 81-105.
- Caster, P. and Pincus, K.V. (1996), “An empirical test of Bentham’s theory of the persuasiveness of evidence”, *Auditing: A Journal of Practice & Theory*, Vol. 15 No. 2, pp. 1-22, Supplement.
- CICA (1999), *Continuous Auditing Research Report*, Canadian Institute of Chartered Accountants – CICA, Toronto.
- Cohen, J. and Kida, T. (1989), “The impact of analytical review results, internal control reliability, and experience on auditors’ use of analytical review”, *Journal of Accounting Research*, Vol. 27 No. 2, pp. 187-217.
- Cohen, E., Lambertson, B. and Roohani, S. (2003), “The implications of economic theories for data level assurances: research opportunities”, in Roohani, S.J. (Ed.), *Trust and Data Assurances in Capital Markets: The Role of Technology Solutions*, Bryant College and PricewaterhouseCoopers, Smithfield, pp. 51-62.
- Cook, T.D. and Campbell, D.T. (1979), *Quasi-Experimentation Design and Analysis Issues for Field Settings*, Houghton Mifflin Company, Boston, MA.

- Elliott, R.K. (2001), "Introductory remarks", *Speech at the Third Continuous Reporting and Auditing Conference*, Rutgers University, Newark, NJ, June 1.
- Ettredge, M.L., Simon, D.T., Smith, D.B. and Stone, M.S. (2000), "The effect of the external accountant's review on the timing of adjustments to quarterly earnings", *Journal of Accounting Research*, Vol. 38 No. 1, pp. 195-207.
- FASB (2000), *Business Reporting Research Project: Electronic Distribution of Business Information*, Financial Accounting Standards Board – FASB, Norwalk, CT.
- FASB (2001), *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, Financial Accounting Standards Board – FASB, Norwalk, CT.
- FASB (2006), *Preliminary Views on an improved Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics of Decision-useful Financial Reporting Information*, Financial Accounting Standards Board – FASB, Norwalk, CT.
- Goodwin, J. (1999), "The effects of source integrity and consistency of evidence on auditors' judgments", *Auditing: A Journal of Practice & Theory*, Vol. 18 No. 2, pp. 1-16.
- Greenstein, M. and Vasarhelyi, M. (2002), *Electronic Commerce: Security, Risk Management, and Control*, 2nd ed., McGraw-Hill Irwin, Boston, MA.
- Helms, G.L. (2002), "Electronic testing and evidence gathering", *The CPA Journal*, Vol. 72 No. 3, pp. 26-31.
- Hirst, D.E. (1994), "Auditors' sensitivity to source reliability", *Journal of Accounting Research*, Vol. 32 No. 1, pp. 113-26.
- Hogarth, R. and Einhorn, H. (1992), "Order effects in belief updating: the belief-adjustment model", *Cognitive Psychology*, Vol. 24 No. 1, pp. 1-55.
- Holstrum, G.L. and Mock, T.J. (1985), "Audit judgment and evidence evaluation: a synopsis of issues and research papers", *Auditing: A Journal of Practice & Theory*, Vol. 5 No. 1, pp. 101-8.
- Hunton, J., Wright, A. and Wright, S. (2003), "The supply and demand for continuous reporting", in Roohani, S.J. (Ed.), *Trust and Data Assurances in Capital Markets: The Role of Technology Solutions*, Bryant College and PricewaterhouseCoopers, Smithfield, pp. 7-16.
- IAASB (2004a), *Auditing Accounting Estimates and Related Disclosures (other than those involving fair value measurements and disclosures)*, ISA 540, International Auditing and Assurance Standards Board – IAASB, New York, NY.
- IAASB (2004b), *Audit Evidence*, ISA 500, International Auditing and Assurance Standards Board – IAASB, New York, NY.
- Johnstone, K.M. (2000), "Client-acceptance decisions: simultaneous effects of client business risk, audit risk, auditor business risk, and risk adaptation", *Auditing: A Journal of Practice & Theory*, Vol. 19 No. 1, pp. 1-26.
- Joyce, E.J. and Biddle, G.C. (1981), "Are auditors' judgments sufficiently regressive?", *Journal of Accounting Research*, Vol. 19 No. 2, pp. 323-49.
- JWG Report (2000), *Recommendations Arising From a Study of Recent Developments in the Audit Methodologies of the Largest Accounting Firms (August)*, Joint Working Group of the International Auditing Practices Committee, the Assurance Standards Board of the CICA, the Auditing Practices Board of the United Kingdom and Ireland, and the Auditing Standards Board of the AICPA.
- Kadous, K., Koonce, L. and Towry, K.L. (2005), "Quantification and persuasion in managerial judgment", *Contemporary Accounting Research*, Vol. 22 No. 3, pp. 643-86.
- Kinney, W.R. Jr (2001), "Accounting scholarship: what is uniquely ours?", *The Accounting Review*, Vol. 72 No. 2, pp. 275-84.

- Knechel, W.R. and Messier, W.F. Jr (1990), "Sequential auditor decision making: information search and evidence evaluation", *Contemporary Accounting Research*, Vol. 6 No. 2, pp. 386-406, Part 1.
- Kogan, A., Sudit, E.R. and Vasarhelyi, M.A. (1999), "Continuous online auditing: a program of research", *Journal of Information Systems*, Vol. 13 No. 2, pp. 87-104.
- LeGrand, C. (2002), "Pressures changing the audit profession", *IT Audit*, Vol. 5, June 2.
- Levitt, A. (1998), "The 'numbers game'", *Speech at the N.Y.U.*, Center for Law and Business, New York, NY, September 28.
- Lundholm, R.J. (1999), "Reporting on the past: a new approach to improving accounting today", *Accounting Horizons*, Vol. 13 No. 4, pp. 315-22.
- Maletta, M.J. and Kida, T. (1993), "The effect of risk factors on auditors' configural information processing", *The Accounting Review*, Vol. 68 No. 3, pp. 681-91.
- Marden, R.E., Holstrum, G.L. and Schneider, S.L. (1997), "Control environment condition and the interaction between control risk, account type and management's assertions", *Auditing: A Journal of Practice & Theory*, Vol. 16 No. 1, pp. 51-68.
- Mautz, R.K. and Sharaf, H.A. (1961), *The Philosophy of Auditing*, American Accounting Association, Sarasota.
- Messier, W.F., Glover, S.M. and Prawitt, D.F. (2006), *Auditing and Assurance Services: A Systematic Approach*, 3rd ed., McGraw-Hill, Boston, MA.
- Moeckel, C. (1991), "Two factors affecting an auditor's ability to integrate audit evidence", *Contemporary Accounting Research*, Vol. 8 No. 1, pp. 270-93.
- O'Donnell, E., Arnold, V. and Sutton, S. (2000), "An analysis of the group dynamics surrounding internal control assessment in information systems audit and assurance domains", *Journal of Information Systems*, Vol. 14 No. 1, Supplement, pp. 97-116.
- O'Keefe, D.J. (2002), *Persuasion Theory and Research*, 2nd ed., Sage, Thousand Oaks, CA.
- PCAOB (2004), *Auditing Standard No. 2: An Audit of Internal Control Over Financial Reporting Performed in Conjunction With an Audit of Financial Statements*, Release No. 2004-001, Public Company Accounting Oversight Board – PCAOB, Washington, DC, March 9.
- Perloff, R.M. (2003), *The Dynamics of Persuasion Second Edition*, Lawrence Erlbaum Associates, Mahwah, NJ.
- Petty, R.E. and Cacioppo, J.T. (1981), *Attitudes and Persuasion: Classic and Contemporary Approaches*, Wm. C. Brown, Dubuque, IA.
- Petty, R.E. and Cacioppo, J.T. (1984), "The effects of involvement on responses to argument quantity and quality: central and peripheral routes to persuasion", *Journal of Personality and Social Psychology*, Vol. 46 No. 1, pp. 69-81.
- Petty, R.E. and Cacioppo, J.T. (1986), *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*, Springer Verlag, New York, NY.
- Quintanilla, C. (1998), "Cummins engine says weak Asia sales and warranty costs will hurt results", *Wall Street Journal*, 23 March, p. 8.
- Ramos, M.J. (1998), *Auditing Estimates and Other Soft Accounting Information*, American Institute of Certified Public Accountants, New York, NY.
- Reimers, J.L. and Fennema, M.G. (1999), "The audit review process and sensitivity to information source objectivity", *Auditing: A Journal of Practice & Theory*, Vol. 18 No. 1, pp. 117-23.
- Rich, J.S., Solomon, I. and Trotman, K.T. (1997), "The audit review process: a characterization from the persuasion perspective", *Accounting, Organizations, and Society*, Vol. 22 No. 5, pp. 481-505.

- SEC (2002), "SEC to propose new corporate disclosure rules", available at: www.sec.gov/news/headlines/corpdiscrules.htm
- SEC (2005), "Revisions to accelerated filer definition and accelerated deadlines for filing periodic reports, final rule", *Federal Register*, Vol. 70 No. 247.
- Schepanski, A., Tubbs, R.M. and Grimlund, R.A. (1992), "Issues of concern regarding within- and between-subjects designs in behavioral accounting research", *Journal of Accounting Literature*, Vol. 11, pp. 121-50.
- Schmitt, R.B. (1998), "Class action? Louisiana-Pacific cut a quick deal to avert homeowner lawsuits; now, claims on faulty siding exceed settlement fund, but lawyers are happy; 'surrounded by mushrooms'", *Wall Street Journal*, 24 July, p. 1.
- Searcy, D., Woodroof, J. and Behn, B. (2003), "Continuous audit: the motivations, benefits, problems, and challenges identified by partners of a big 4 accounting firm", *Proceedings of 36th Hawaii International Conference on System Sciences*, (January), pp. 210-9.
- Weber, R. (1999), *Information Systems Control and Audit*, Prentice-Hall, Upper Saddle River, NJ.

Appendix 1. Summary of experimental materials allowance for doubtful accounts task

Panel A: source objectivity manipulation

- Internal evidence In late December, you determined that the aging method has adequately provided for all probable losses except for one large material account which will be in the 90-120 days past due range as of December 31. On December 31, you obtained the following new information about this account from the customer file provided by the client's credit manager: ...
- External evidence In late December, you determined that the aging method has adequately provided for all probable losses except for one large material account which will be in the 90-120 days past due range as of December 31. On December 31, you obtained the following new information about this account directly from your contact at an independent credit agency: ...

Panel B: internal control effectiveness manipulation

- Weak internal control effectiveness Your review of credit policy in late December reveals that major changes to attract additional (potentially risky) customers have been implemented. Tests of the new policy find that several new customers who did not meet the client's minimum credit standard were granted credit. In addition, other new customers were added without proper credit approvals. Your review of the client's computerized sales system indicates that there have been significant problems modifying the system to reflect the new credit policy
- Strong internal control effectiveness Your review of credit policy in late December reveals that the client has taken several steps in the past six months to strengthen credit quality. For example, the client now requires audited financial statements or two credit reports from independent sources before granting credit to any customer. In addition, the client has expanded its credit review procedures to ensure compliance with credit policy. Tests of credit policy and credit approval indicate that the new policy has been consistently applied. Your review of the client's computerized sales system finds that the system was properly updated to reflect the credit policy changes and that all controls are functioning adequately

Table AI.

Appendix 2. Summary of experimental materials provision for product warranty claims task

Panel A: source objectivity manipulation

Internal evidence In late December, you determined that the current warranty accounting policy has adequately provided for all probable losses except for the possibility of warranty claims from deluxe diesel engine sales. For the 4th quarter, 15 percent of the client's total sales were deluxe diesel engines. On December 31, you obtained the following information about the deluxe diesel engine warranty claims from a product status memo prepared by client management: . . .

External evidence In late In late December, you determined that the current warranty accounting policy has adequately provided for all probable losses except for the possibility of warranty claims from deluxe diesel engine sales. For the 4th quarter, 15 percent of the client's total sales were deluxe diesel engines. On December 31, you obtained the following information about the deluxe diesel engine warranty claims from your contact at the leading engine testing facility: . . .

Panel B: internal control effectiveness manipulation

Weak internal control effectiveness Your review of the product warranty procedures in late December reveals several major shortcomings in the past six months. For example, the client does not require that all large warranty claims be reviewed and approved by client management before payment is made. In addition, the client's new product warranty tracking system has been delayed due to software problems. The system, which will match product warranty claims directly to products, should be in place within six months. The client's current product warranty tracking system is an end-user computing system consisting of several spreadsheets prepared and maintained by two clerical employees. Your review indicates the current system is inefficient. The system's developer, the client's senior product warranty clerk, had a stroke in July. Her replacement appears competent but overwhelmed with her new duties

Strong internal control effectiveness Your review of product warranty procedures in late December reveals that the client has taken several steps in the past six months to reduce the risk that the Provision for Product Warranty Claims account is understated. For example, the client requires all product warranty claims greater than \$50 to be reviewed and approved by client management before payment is made. In addition, the client developed a new product warranty tracking system. This system traces product warranty claims to specific engine products by requiring the appropriate engine product number to be recorded before any warranty claim can be paid. Tests of product warranty procedures indicate that the new procedures have been consistently applied. Your review finds that the client's computerized product warranty tracking system is functioning properly and that all controls appear to be working adequately

Table AII.

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