

# Halo Effects during Internal Control Evaluation: The Influence of Management Self-Assessment on Auditor Judgment

Barbara Arel  
Steven E. Kaplan  
Ed O'Donnell

W.P. Carey School of Business  
Arizona State University

October, 2005

## **Note to Workshop Participants**

Based on comments received during a recent workshop, the original version of this paper has been radically revised in a very short time. This paper is a work in progress that will require more revision and editorial polish before we submit it for publication. We look forward to your comments as they will make a significant contribution to the development process. However, we ask you to remember that you will be reading a manuscript in the early stages of development.

We appreciate feedback provided Stan Biggs, Michelle Dias, and participants in research workshops at the University of Connecticut, Texas A&M University and the University of Waterloo. This research was supported by a grant from the W. P. Carey School of Business at Arizona State University.

# Halo Effects during Internal Control Evaluation: The Influence of Management Self-Assessment on Auditor Judgment

## ABSTRACT

Recent legislation requires management at public companies to assess and publicly report on the reliability of their internal controls, and requires auditors to attest to management's report. This study used a laboratory experiment to examine (a) whether knowing of management reliability assessments influences auditor judgment about internal control reliability, and whether that influence can be reduced by (b) experience at the rank of senior and (c) directing auditor attention toward evidence from sources other than management. Auditors with different levels of experience rated control reliability based on information about management reliability ratings and evidence gathered independent from management by other members of the auditing team. Results suggest that knowledge of management reliability assessments produced halo effects that influenced auditor reliability ratings in the direction of management assessments. Auditor experience reduced halo effects but auditing procedures designed to increase attention to independent evidence did not reduce halo effects.

# Halo Effects during Internal Control Evaluation: The Influence of Management Self-Assessment on Auditor Judgment

## I. INTRODUCTION

Evaluating internal controls has been a component of auditing for some time but recent legislation has imposed new requirements for reporting on control reliability. Internal controls are procedures that an organization implements to help protect assets from misuse, enforce company policies, and ensure the reliability of accounting information. Evaluating the reliability of internal controls involves analyzing and testing risk management procedures that the organization has put in place to achieve these objectives. Under the Sarbanes-Oxley Act of 2002, management at publicly-traded companies must assess the reliability of their system of internal controls over financial reporting and issue their findings in a public report. That legislation also mandates that auditors (1) attest to management's report, (2) perform an independent assessment of control reliability, and (3) issue their own report on internal controls.

Management's self-assessment provides information to auditors about control reliability that has not previously been available when they evaluate internal controls. Recent professional guidance suggests that auditors use management assessments as a starting point for their independent evaluation (PCAOB 2004b). However, a potential conflict arises if management reliability assessments influence auditor judgment because information provided by management is not independent evidence. To ensure auditor independence from management, professional standards prohibit auditors from relying on evidence obtained from management in lieu of acquiring and evaluating evidence from sources other than management (PCAOB 2004a).

This study examines how knowledge of management reliability assessments mandated by the Sarbanes-Oxley Act influences auditor judgment about the reliability of internal controls

when auditors integrate information from management with evidence gathered from sources other than management. Auditors will learn of management reliability assessments when they perform procedures necessary for attesting to management's report on internal controls. If this knowledge has an undue influence on auditor judgment when they gather and evaluate evidence from sources other than management, then audit judgment will not be independent from information provided by management. In other words, knowledge of management reliability assessments might bias auditor judgment and compromise the independence of auditor opinions about internal controls. Furthermore, because professional standards direct auditors to consider results from internal control evaluation when they plan their audit of the financial statements, biased judgment about control reliability could also threaten the rigor of the procedures that auditors select for gathering and assessing evidence during an integrated audit.

Examining the potential for knowledge of management assessments to influence auditor judgment during internal control evaluation involves understanding how global opinions influence judgment about detailed evidence. The influence that holistic judgments (such as management reliability assessments for internal controls) have on the evaluation of information about granular judgment criteria (such as detailed evidence about control procedures) has been labeled the *halo effect* (Nisbett and Wilson 1977). During performance evaluation, halo effects have been used to describe the influence that a superior's overall opinion of a subordinate has on the superior's evaluation of detailed attributes used to measure the performance of that subordinate (Murphy, Jako and Anhalt 1993). In auditing, research suggests that a halo effect attributable to holistic business risk assessments can bias auditor judgment about the potential for misstatement evidenced by more granular information about patterns of fluctuations in account balances (O'Donnell and Schultz 2005). We believe that knowledge of management reliability

assessments could produce halo effects that influence the opinion auditors develop about overall internal control reliability when they evaluate detailed evidence about the effectiveness of control procedures.

This study examines three research questions that provide insight about halo effects during internal control evaluation. First, we examine whether management assessments have a halo effect on auditor judgment about the reliability of internal controls when auditors integrate knowledge of overall reliability ratings from management with detailed reliability ratings developed independent from management by other members of the audit team. Second, because auditors at the rank of senior are largely responsible for gathering and evaluating detailed evidence about internal controls (Abdolmohammadi 1999), we examine whether more-experienced seniors are less susceptible to halo effects than seniors with less experience. Third, because auditing firms develop mandatory procedures for directing auditor attention toward the most relevant evidence (Wright and Ashton 1989), we examine how a procedure that increases auditor attention to evidence gathered by the audit team influences halo effects.

A laboratory experiment provided data for examining these research questions. Auditors at the rank of senior were asked to rate the overall reliability of internal controls over an e-commerce sales system. Participants were provided with (1) management's overall reliability assessment for controls over that system and (2) reliability assessments from the audit firm's computer specialists for the six primary control objectives in that system. Relative to reliability assessments developed by management, reliability assessments developed by the audit firm's computer specialists represent extremely relevant and independent evidence for evaluating internal controls.

To establish a basis for detecting halo effects, management reliability assessments were manipulated as either relatively strong or relatively weak. If halo effects influence auditor judgment, participant reliability ratings for internal controls will be higher (lower) when they know that management has assessed control reliability as strong (weak). To examine whether experience influenced halo effects, participants had experience that varied across the entire range of experience for auditors at the senior rank. Examining the influence of auditor experience provides evidence about the potential to manage halo effects through staffing policies. To manipulate the level of attention directed toward evidence gathered by the audit team independent from management, one group of participants rated the relative importance of each of the six control objectives that had been evaluated by the audit firm's computer specialists, while others were not required to document their perceptions about importance. Examining procedures for directing auditor attention provide evidence about whether halo effects can be managed through appropriately-structured control evaluation procedures.

Consistent with our hypotheses, findings indicate that knowledge of management reliability assessments (a) produces a halo effect that (b) diminishes as auditor experience increases but cannot be (c) reduced by increasing attention to evidence gathered by the audit team. These results provide evidence that the opinions of management, to which auditors must now attest, can influence auditor judgment when they gather and evaluate their own evidence about the effectiveness of internal controls. Our findings motivate research that examines whether halo effects can have undue influence that biases auditor judgment and impairs the independence of auditor opinions on internal controls, and explores alternatives for managing halo effects in the field.

The remainder of this study is organized into four sections. In section II, we explain the theoretical framework that provided a foundation for our research hypotheses. Section III describes the experimental method we used to gather data for evaluating our hypotheses. Section IV presents the results of our hypothesis tests. Section V discusses our findings and provides suggestions for future research.

## II. THEORY

By requiring that auditors attest to management assessments of control reliability, the Sarbanes-Oxley Act has significantly increased the depth and breadth of evidence about internal controls that auditors must evaluate. From an information processing perspective, auditors must now integrate evidence from management with evidence gathered from sources other than management when they perform their own evaluation of internal controls. These new requirements of the audit ecology raise questions about how auditor judgment will be influenced by processing evidence acquired from a source that is not independent from management along with evidence gathered from a source that is independent from management.

Information about management evaluation of control reliability could provide valuable insight for auditors (PCAOB 2004b). However, if evidence provided by management has too much influence on auditor judgment relative to evidence gathered from sources other than management, then knowledge of management reliability assessments will bias auditor judgment, and auditor opinions about the reliability of internal controls will lack independence.

Determining the threshold at which evidence from management ceases to provide insight and begins to impose bias involves a challenging and complex undertaking that is beyond the scope of our study. In this study, the objectives are to examine (a) how knowledge of management

reliability assessments can change auditor judgment and (b) the potential to manage the influence that evidence from management has on auditor judgment with interventions that auditors could use in the field.

This section explains how information about management reliability assessments could produce halo effects that influence auditor judgment and describes interventions that could help reduce halo effects. Then, we discuss how two variables that auditing firms can control could influence halo effects. Next, we present hypotheses about (1) the impact that halo effects can have on auditor judgment during internal control evaluation, and how we expect halo effects to be affected by (2) assigning more experienced auditors to evaluate internal controls and (3) directing auditor attention toward evidence gathered from sources other than management.

### **Understanding Halo Effects**

Halo effects occur during information processing tasks when knowledge of an overall evaluative judgment alters the relative weight that a decision maker assigns to information about decision criteria. For example, when a decision maker rates overall performance by evaluating information about granular elements of performance, knowledge of a favorable (unfavorable) overall opinion tends to increase (reduce) the influence of information that supports a favorable rating and reduce (increase) the influence of information that supports an unfavorable rating (Cooper 1980). In other words, knowledge about a holistic evaluative judgment creates a halo that causes decision makers to develop judgments about detailed criteria that are consistent with the holistic judgment (Balzer and Slusky 1992).

Halo effects provide a subconscious context for evaluating information that alters judgment about the relative importance of decision cues. The mental model created by halo effects exerts influence on judgment that the unaided decision maker does not recognize and,

without intervention, is unlikely to overcome (Baltes and Parker 2002). Knowledge of overall evaluative judgments can produce halo effects even if the overall judgment originated from a source other than the decision maker (Lance, LaPointe, and Fisicaro 1994). Halo effects occur because information about an overall evaluative judgment activates knowledge structures about similar judgment situations (either from experience or through analogy), and these memories subconsciously inspire weights for decision cues consistent with the outcome that the decision maker remembers (Slovic et al. 2002).

In the context of internal control evaluation, an auditor who learns that management has rated control reliability as strong would subconsciously remember other situations where internal controls were considered strong. These memories would produce a subconscious decision context for evaluating the client's controls and provide a mental model that encourages the auditor to rate the effectiveness of individual control procedures at a level consistent with a strong overall reliability rating. Because halo effects operate at a subconscious level, the auditor is not likely to recognize that knowledge of management's opinion has changed the way that he or she evaluates the effectiveness of individual control procedures. Applying halo theory in the context of auditor judgment during internal control evaluation suggests the following research hypothesis:

Hypothesis One: When auditors evaluate internal controls by integrating evidence from management with evidence from independent sources, auditor ratings of control reliability will increase (decrease) when management ratings of control reliability increase (decrease).

### **Reducing Halo Effects**

Kennedy (1995) presents a framework for improving auditor judgment that provides insight about interventions that could be imposed during internal control evaluation to reduce

halo effects. She explains that identifying effective interventions begins by determining the nature and source of the influence that knowledge has on the integration of decision information. Arkes (1991) describes how judgment can suffer when people either apply inadequate effort to a judgment task or use an inappropriate method to evaluate decision cues. Kennedy (1995) extends that framework to categorize bias in auditor judgment as either effort related or data related. Reducing effort-related bias involves increasing the cognitive effort and attention devoted to evaluating audit evidence. Reducing data-related bias involves changing the way auditors apply their knowledge when they evaluate evidence.

Kennedy (1995) explains that effort-related bias compromises judgment when auditors do not thoroughly evaluate the evidence they acquire or fail to acquire enough evidence. Imposing conditions that increase the amount of effort and attention auditors devote to gathering and evaluating evidence can reduce effort-related bias by increasing the availability and salience of decision information. Data-related bias occurs when auditors fail to use their knowledge to evaluate evidence correctly. Task-specific experience can reduce data-related bias by enhancing auditor's ability to use knowledge for developing appropriate mental models to interpret and integrate audit evidence. Auditing firms must understand the type of bias they are trying to manage, then design an intervention that targets the source of that bias. In other words, a mismatch between type of bias and intervention design is not likely to improve judgment.

We believe that the influence of halo effects is data related but not effort related. Halo theory suggests that the influence of a holistic judgment results from inappropriately weighting decision cues to be consistent with knowledge structures activated by that holistic judgment. Halo effects would arise during internal control evaluation because of how auditors weight evidence about control procedures, not because they fail to evaluate enough procedures, or fail to

evaluate each procedure with sufficient rigor. O'Donnell and Schultz (2005) found no association between halo effects and the cognitive effort or attention that auditors devoted to detailed evidence. Therefore, consistent with Kennedy (1995), we believe that assigning auditors with more experience will reduce halo effects during internal control evaluation but imposing conditions that increase effort and attention will not.

### **Auditor Experience**

Field experience provides the opportunity to accumulate knowledge that helps professionals develop effective mental models for interpreting and integrating evidence during diagnostic reasoning tasks (Bonner and Lewis 1990; Patel and Groen 1986, 1991). Field experience improves professionals' ability to recognize potential problems by matching the evidence they acquire with relevant information they have stored in memory (Chi, Glaser, and Rees 1982). Auditors with more experience are better at assigning appropriate decision weights to audit evidence (Bonner 1990) and distinguishing relevant evidence from irrelevant evidence (Shelton 1999). Other things being equal, auditors with more experience are more likely to interpret and integrate decision information appropriately than auditors with less experience (Libby and Luft 1993).

Judgment suffers from data-related bias when decision cues are not properly interpreted and integrated with knowledge stored in memory. Auditors with more experience should be able to evaluate evidence more effectively than auditors with less experience. In practice, auditing firms assign staff based on level of experience in an effort to match knowledge and ability with the demands of the task. If halo effects are data related and audit experience provides knowledge that enhances auditor ability to integrate data during evaluative judgment tasks, then auditing firms should be able to reduce halo effects by assigning auditors with an appropriate level of

experience to evaluate internal controls. These associations give rise to our second research hypothesis:

Hypothesis Two: When auditors evaluate internal controls by integrating evidence from management with evidence from independent sources, ratings of control reliability provided by auditors with more experience will be influenced by management ratings of control reliability to a lesser degree than ratings provided by auditors with less experience.

### **Directing Attention**

If halo effects from management reliability assessments influence auditor judgment, besides assigning more experienced auditors to control evaluation tasks, another way to reduce halo effects would be to withhold information about management assessments until auditors have completed their independent evaluation. While this intervention is likely to be effective, it is probably neither practical nor pragmatic to enforce such a policy in the field. Furthermore, although auditing standards direct auditors not to rely on information from management as an alternative to evidence they gather from independent sources, knowledge of the evaluations that management has performed could provide useful insight for planning the procedures auditors will use to evaluate control reliability.

A third way to reduce halo effects might be to develop control evaluation procedures designed to focus auditor attention on evidence gathered from independent sources. However, while this solution has intuitive appeal, research on halo effects suggests that such an intervention is not likely to be effective. By their nature, halo effects lead to the activation and use of inappropriate knowledge structures for evaluating decision cues. Halo effects influence judgment by changing the knowledge-based criteria used for evaluating decision cues, not because the decision maker alters the level of attention directed toward decision cues. As a result, there is no reason to believe that interventions designed to increase the effort and attention

decision makers devote to evaluating decision cues with inappropriate knowledge structures will diminish the influence of halo effects.

Control evaluation procedures that increase the cognitive effort auditors devote to evaluating decision information are not likely to reduce the influence that management assessments have on auditor judgment because halo effects result from using different knowledge to evaluate decision information, not from using differing levels of cognitive effort to apply that knowledge. As a result, interventions that direct auditor attention toward evidence about control reliability that was gathered from sources independent from management is not likely to reduce halo effects. These associations between halo effects and cognitive effort provide a basis for our third research hypothesis:

Hypothesis Three: When auditors evaluate internal controls by integrating evidence from management with evidence from independent sources, ratings of control reliability provided by auditors who were encouraged to increase their attention to evidence from sources other than management will be influenced by management ratings no less than ratings provided by auditors who do not receive that intervention.

### III. METHOD

We tested our hypotheses with data gathered during a laboratory experiment. Experienced auditors were asked to evaluate the reliability of a client's internal controls over a computerized e-commerce sales system. Audit seniors were selected for the study because they are generally responsible for conducting internal control evaluations. Participants were employed by a single big-four audit firm and completed the experiment during a national training session under the supervision of a research proctor. The 156 participants had an average of 12.6 months (standard deviation of 11.5 months) of experience at the senior rank. Some had just been promoted to senior while others had been seniors for up to five years.

## **Experimental Task**

Participants were given the task of evaluating internal controls for the sales system at a computer hardware and software retailer. Materials indicated that, with few exceptions, all sales were transacted through the company's website. The case included internal control reliability information from two sources: (1) management's self-assessment of overall control reliability for the e-commerce sales system, and (2) reliability ratings from the audit firm's computer audit specialists for each of six control objectives for sales. Reliability ratings from both management and audit firm specialists were based on a nine-point scale where one represented weak, five represented moderate, and nine represented strong. Information about management ratings and ratings from audit firm specialists was presented to participants in random order. Presentation order did not influence the results.

Regarding management's self-assessment, the case stated that, pursuant to the requirements of the Sarbanes-Oxley Act, management had performed an evaluation of their e-commerce sales system and rated overall control system reliability. We manipulated management reliability ratings as either high or low to provide a basis for detecting halo effects. Participants assigned to the low-management-rating condition were told that management had rated control system reliability at three, which is midway between weak and moderate. Participants assigned to the high-management-rating condition were told that management had rated control system reliability at seven, which is midway between moderate and strong.

The six control objectives evaluated by the firm's computer specialists were taken from the CobiT framework (ISACA 2003) and included (1) processing integrity, (2) system security, (3) user service levels, (4) customer assistance, (5) problem monitoring, and (6) system availability. The case indicated that the firm's computer specialists had tested individual control procedures and made a reliability assessment for internal controls for each of the six objectives.

Reliability ratings across the six control objectives were held constant and presented in the same order to all participants. Reliability ratings for the six objectives ranged from three to seven with a mean of five.

To manipulate the amount of cognitive effort and attention that participants devoted to evidence provided by reliability ratings for control objectives, about half of the participants were instructed to rate the relative importance of each of the six control objectives that had been evaluated by firm specialists. Participants who rated importance of control objectives were asked to categorize the relative importance of each objective as low, moderate, or high. Their responses did not differ across the other manipulated condition (high versus low management reliability rating) and were not associated with either amount of experience or variation in control reliability ratings.

### **Experimental Design**

Participants were instructed to rate the overall reliability of internal controls over the sales system on a scale from one (low) to nine (high). We used their response as the dependent variable for all hypothesis tests. We also measured the size of halo effects. For participants who were told that management rated control reliability at 7 (the high-management-rating condition), halo effect was calculated as their control reliability rating minus the sample mean of 4.8. For participants who were told that management rated control reliability at 3 (the low-management-rating condition), halo effect was calculated at 4.8 minus their control reliability rating. We used this measure to construct an alternative test of the potential interventions that were examined in this study.

This study included three independent variables. Two conditions were manipulated by differences in task information and requirements, including (1) whether participants received a

high or low management reliability rating and (2) whether participants were required to rate the importance of control objectives. The third variable was manipulated by assigning participants to experimental conditions based on months of experience at the rank of senior. We distributed our two experimental manipulations across participants with different levels of experience to create three groups with specific combinations of experimental conditions. These sample partitions, which were not mutually exclusive (participants were included in more than one group), allowed us to control for combinations of debiasing interventions when we tested our research hypotheses.

The low-experience group included 84 participants who did not rate the importance of control objectives, which provided a partition for examining judgment bias from halo effects without potential confounding from either high levels of experience or attention-directing procedures. The medium-experience group of 81 participants included 41 (40) participants who rated (did not rate) the importance of controls, which provided a partition for testing the influence of attention-directing procedures without potential confounding from high levels of experience. The high-experience group included 72 participants who rated the importance of control objectives, which provided a partition for testing the influence of experience over and above the influence of attention-directing procedures. Across all three partitions, approximately half of the participants were assigned to the high-management-rating condition while the rest were assigned to the low-management-rating condition.

#### IV. RESULTS

Descriptive statistics for measured variables across the three sample partitions and by level of management reliability rating are presented in table 1. We used t-statistics reported in

table 1 to test our first hypothesis. We used analysis of variance with control reliability ratings as the dependent variable to test our second and third hypotheses. To accommodate our tests of hypotheses two and three, we created categorical experience variables with a value of one (zero) for participants above (below) the median months of experience at the senior rank in each sample partition. We replicated all hypothesis tests using months at the senior rank (original continuous measure) instead of a categorical experience variable and the results did not change.

---

Insert table 1 about here

---

### **Test of Hypotheses**

Hypothesis one states that halo effects from knowledge of management ratings will bias auditor judgment about control reliability. If so, control reliability ratings provided by participants in the high-management-rating condition should be higher than ratings provided by participants in the low-management-rating condition. T-statistics reported in table 1 for the low-experience partition indicate that, on average, participants who were told management had rated control reliability at three rated control reliability significantly lower ( $p < .01$ ) than participants who were told management had rated control reliability at seven. These findings support our first research hypothesis by providing evidence that judgments developed by participants without high experience at the senior rank who were not required to rate the importance of control objectives were influenced by halo effects.

Hypothesis two states that judgment bias attributable to halo effects will diminish as auditor experience increases. This hypothesis predicts an interaction between management ratings and level of experience such that the difference between average control reliability ratings in the high and low management rating conditions will diminish as experience at the rank

of senior increases. Consistent with this prediction, panel A of table 2 reports a significant interaction ( $p < .05$ ) between management ratings and level of experience for participants in the high-experience sample partition.

Cell means reported in panel B of table 2 and the graphical illustration provided in figure 1 reveal the nature of this interaction. For participants with lower levels of experience, there is a significant difference ( $p < .01$ ) between average participant ratings of 5.9 when management ratings were seven versus 4.0 when management ratings were three. However, for participants with higher levels of experience, there is no significant difference in average participants ratings of 4.9 in the high-management-rating conditions versus 4.4 in the low-management-rating condition. These findings support hypothesis two by providing evidence that participants with more experience were less influenced by knowledge of management reliability ratings than participants with less experience.

---

Insert table 2 and figure 1 about here

---

Hypothesis three states that increasing the level of cognitive effort and attention auditors devote to evidence will not reduce the bias attributable to halo effects. This hypothesis predicts that the difference between average control reliability ratings for the high- and low-management-ratings conditions will not change when auditors are required to perform attention-directing procedures. In other words, there should be NO difference between reliability ratings for participants who rated the importance of control objectives and participants did not, either for participants in the high-management-rating condition or for participants in the low-management-rating condition. However, results reported in panel A of table 3 for participants in the medium-experience partition indicate a significant interaction ( $p < .01$ ) between management reliability

ratings and attention-directing procedures. Cell means reported in panel B of table 3 and the graphical illustration in figure 2 provide insight into the nature of this interaction.

If increasing auditor attention to evidence decreased (increased) bias attributable to halo effects, then the slope of the line in figure 2 for the high-management-rating group would be negative (positive) and the slope of the line for the low-management-rating group would be positive (negative). Hypothesis three predicts that both slopes should be zero, that is, rating the importance of control objectives should not influence differences between average reliability ratings for the high- and low-management-rating conditions.

The significant interaction ( $p < .01$ ) reported in panel A of table 3 indicates that these two lines slope in different directions. However, although the direction of slope for both lines is consistent with increased bias, neither slope is significantly different from zero. As reported in panel B of table 3, neither the t-statistic for the difference between means of 4.5 and 4.0 for the low-management-rating group nor the t-statistic for the difference between means of 5.1 and 5.9 for the high-management-rating group are significant at the  $p < .10$  level. These results support hypothesis three by providing evidence that attention-directing procedures had no significant influence on bias attributable to halo effects either in the high- or the low-management-rating conditions.

---

Insert table 3 and figure 2 about here

---

### **Additional Analysis**

For each sample partition reported in table 1, mean control reliability ratings for the low-management-rating condition were significantly smaller than mean control reliability ratings for the high-management-rating condition at the  $p < .01$  level. These findings provide evidence

across the entire sample that supports hypothesis one and indicates that auditor judgment was biased by halo effects. We also constructed an alternative test of hypotheses two and three using all of the observations in our sample.

Hypothesis two predicts that bias attributable to halo effects should diminish as auditor experience increases and hypothesis three predicts that bias attributable to halo effects should NOT diminish when auditors use attention-directing procedures. To provide a direct, simultaneous test for these associations, we regressed our metric for judgment bias (described above) on (a) months of experience at the senior rank and (b) a dummy variable that controlled for rating the importance of control objectives. Because we determined that the interaction between those two independent variables was not significant (at the  $p < .10$  level), we dropped the interaction term in our model.

Results presented in table 4 provide additional support for hypotheses two and three. The significant ( $p < .01$ ), negative parameter estimate for months at the rank of senior suggests that judgment bias attributable to halo effects decreased as experience increased. The significant ( $p < .01$ ) positive parameter estimate for rating importance of control objectives suggests that average judgment bias attributable to halo effects was greater instead of smaller for auditors who used attention-directing procedures.

---

Insert table 4 about here

---

## V. DISCUSSION

Recent federal regulations require that management at publicly-traded companies assess and report on the reliability of their system of internal controls over financial reporting. Those

regulations also require auditors to perform an independent evaluation and express two opinions, one with regard to the effectiveness of internal controls and another with regard to the fairness of management's self-assessment of control effectiveness. Little is known about the extent to which auditors are likely to consider management's internal control ratings in reaching their own independent opinion about control reliability. This study examined (a) whether knowledge of management's self-assessment of overall internal control effectiveness creates halo effects that influence auditor judgment about control system reliability, (b) whether halo effects decrease as auditors gain additional experience, and (c) whether mandating control evaluation procedures that direct auditor attention toward evidence gathered independent from management influences halo effects.

Data from a laboratory experiment provided evidence for evaluating these research questions. There were three significant findings. First, evidence suggests that halo effects from knowledge of management reliability assessments have the potential to influence auditor judgment about internal control reliability in the direction of management assessments. Second, it appears that audit firms can reduce halo effects during internal control evaluation by assigning staff with appropriate levels of experience. Third, designing procedures for evaluating internal controls that increase auditor attention to the most relevant evidence does not appear to be an effective method for managing halo effects.

The judgment bias attributable to halo effects is potentially problematic. When management rates control effectiveness at high levels, relatively inexperienced audit seniors may be persuaded to overestimate the effectiveness of internal controls. Furthermore, professional standards (PCAOB 2004a) and recent guidance (PCAOB 2005) stress the importance of integrating the audit of internal controls with the audit of the financial statements. If auditors

overestimate the effectiveness of internal controls, they may also underestimate misstatement risk when they integrate their judgment about control risk with the planning process for the financial statement audit.

These findings should be important to audit firms as they consider their staffing policies to ensure that auditors with adequate experience are assigned to control evaluation tasks. Firms have typically charged seniors with this responsibility. Since conclusions from management are much more prevalent in the audit ecology after the passage of the Sarbanes-Oxley Act, auditors may need to re-evaluate their criteria for assigning staff. Our results suggest that firms may wish to assign highly experienced audit seniors to tasks involving self-assessments by management. Alternatively, firms may want to consider modifying their audit procedures so that auditors who evaluate controls do not see management's self-assessment until they have completed their evaluation. However, such an approach would appear to be inconsistent with current guidelines suggesting that management's self-assessment is a natural starting point.

Our findings also have implications for audit standard setters. Professional guidance seems to urge auditors to consider evidence provided by management's self-assessment of internal controls as a natural starting point for the audit of internal control, but base their independent evaluation of control reliability on evidence that they gather themselves (PCAOB 2004b). These two prescriptions could be characterized as contradictory and, in the absence of more specific guidance, might actually hinder the development of consistent and reliable audit practices for evaluating and reporting on internal controls.

Standard setters may want to consider developing more detailed recommendations for integrating evidence from management self-assessment of control reliability with evidence gathered by the audit team independent from management. For example, standard setters may

wish to consider explicitly directing auditors to be mindful that management's self-assessment lacks objectivity and should be discounted as evidence. While such a standard may merely reflect and incorporate the judgments of more experienced audit seniors, it might also help to foster the development of more effective knowledge earlier in an auditor's career.

Further research regarding auditor interactions with management's assessments is encouraged. For example, research could contribute to audit practice by examining whether the use of alternative task structures make objectivity constraints more salient to less experienced audit seniors. Research might also help audit firms develop more effective procedures for integrating evidence from management self-assessment with evidence developed from independent sources when auditors evaluate control reliability. For example, decision aids might be useful to less experienced audit seniors as a mechanism to integrate evidence obtained from sources characterized by varying degrees of independence.

## REFERENCES

- Abdolmohammadi, M. J. 1999. A comprehensive taxonomy of audit task structure, professional rank and decision aids for behavioral research. *Behavioral Research in Accounting* 11: 51-92.
- Arkes, H. 1991. Costs and benefits of judgment errors: Implications for debiasing. *The Accounting Review* (November): 486-98.
- Baltes, B. and C. Parker. 2002. Reducing the effects of performance expectations on behavioral ratings. *Organizational Behavior and Human Decision Processes* 82.2: 237-67.
- Balzer, W. and L. Slusky. 1992. Halo and performance appraisal research: A critical examination. *Journal of Applied Psychology* 77: 975-985.
- Bonner, S. 1990. Experience effects in auditing: The role of task-specific knowledge. *The Accounting Review*. 65.1 (January): 72-92.
- and B. Lewis. 1990. Determinants of auditor expertise. *Journal of Accounting Research* 28 (Supplement): 1-20.
- Chi, M. T. H., R. Glaser, and E. Rees. 1982. Expertise in problem solving. In R. Sternberg (Ed.), *Advances in the psychology of human intelligence* (pp. 7-75). Hillsdale, NJ: Erlbaum.
- Cooper, W. 1980. Ubiquitous halo. *Psychological Bulletin* 90: 218-244.
- International Systems Audit and Control Association (ISACA). 2003. *Control Objectives for Business Information Technology* (CobiT). Rolling Meadows, IL.
- Kennedy, J. 1995. Debiasing the curse of knowledge in audit judgment. *The Accounting Review* 70.2 (April): 249-74.
- Lance, C., J. LaPointe, and S. Fiscaro. 1994. Tests of three causal models of halo rater error. *Organizational Behavior and Human Decision Performance* 57: 83-96.
- Libby, R. and J. Luft. 1993. Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society* 18.5: 425-50.
- Murphy, K., R. Jako, and R. Anhalt. 1993. Nature and consequences of halo error: A critical analysis. *Journal of Applied Psychology* 78.2: 218-25.
- Nisbett, R. and T. Wilson. 1977. The halo effect: Evidence for unconscious alteration of judgments. *Journal of Personality and Social Psychology* 35: 250-56.

- O'Donnell, E. and J. Schultz. 2005. The halo effect in business-risk audits: Can strategic risk assessment bias auditor judgment about accounting details? *The Accounting Review* 80.3 (July): 921-40.
- Patel, V., and G. Groen. 1986. Knowledge based solution strategies in medical reasoning. *Cognitive Science* 10: 91-116.
- . 1991. The generality of medical expertise: A critical look. In A. Ericson & J. Smith (Eds.), *Toward a general theory of expertise: Prospects and limits* (pp. 93-125). New York: Cambridge University Press.
- Public Company Auditing Oversight Board (PCAOB). 2004(a). Auditing Standard No. 2 – An audit of internal control over financial reporting performed in conjunction with an audit of financial statements.
- . 2004(b). Release No. 2004-001 (March 9, 2004).
- . 2005. Release No. 2005-009 (May 16, 2005).
- Shelton, S. 1999. The effect of experience on the use of irrelevant evidence in auditor judgment. *The Accounting Review* 74.2 (April): 217-24.
- Slovic, P., M. Finucane, E. Peters, and D. MacGregor. 2002. Rational actors or rational fools: Implications of the affect heuristic for behavioral economics. *Journal of Socio-Economics* 31: 329-42.
- Wright, A. and R. Ashton. 1989. Identifying audit adjustments with attention-directing procedures. *The Accounting Review*: 710-28.

Table 1  
Descriptive Statistics

	<u>All Participants in Sample Partition</u>				<u>Management Rating Condition</u>		
	<u>Mean</u>	<u>SD</u>	<u>Min</u>	<u>Max</u>	<u>Low</u>	<u>High</u>	<u>T-statistic</u>
Low-experience seniors (none rated importance of control objectives):							
Ratings	4.8	1.0	2.0	7.0	4.4	5.1	3.40***
Experience	6.3	7.8	0.0	60.0	7.0	5.6	0.79
Bias	0.3	0.9	- 2.2	2.8	0.3	0.4	0.40
Medium-experience seniors (half rated importance of control objectives):							
Ratings	4.7	1.3	1.0	7.0	4.2	5.5	4.81***
Experience	11.7	7.1	1.0	60.0	11.9	11.4	0.36
Bias	0.5	1.1	- 1.8	3.8	0.5	0.7	0.50
High-experience seniors (all rated importance of control objectives):							
Ratings	4.7	1.4	1.0	7.0	4.1	5.4	4.09***
Experience	19.8	10.7	1.0	48.0	18.7	21.4	1.09
Bias	0.6	1.2	- 2.2	3.8	0.6	0.6	0.03

\* p < .10; \*\* p < .05; \*\*\* p < .01

Ratings: Control reliability ratings from one (low) to nine (high)

Experience: Months of experience at the rank of senior

Bias: Calculated as control reliability ratings minus the sample mean of 4.8 for participants in the high-management-rating condition, or 4.8 minus control reliability ratings for participants in the low-management-rating condition.

Table 2  
Test of Hypothesis Two

<b>Panel A: Analysis of Variance</b>			
Dependent variable: Control reliability rating			
	<u>Degrees of Freedom</u>	<u>Sum of Squares</u>	<u>F-statistic</u>
Model	3	36.44	7.76 ***
Error	68	106.43	
Management reliability rating	1	25.25	16.13 ***
Level of senior experience	1	1.71	1.10
Interaction	1	7.86	5.02 **

<b>Panel B: Cell Means</b>			
	Low management reliability rating	High management reliability rating	Marginal mean
Low experience at rank of senior	4.0 n = 26	5.9 n = 15	4.9
High experience at rank of senior	4.4 n = 15	4.9 n = 16	4.6
Marginal mean	4.2	5.4	
	t = 0.89	t = 2.21 **	t = 1.05

\* p < .10; \*\* p < .05; \*\*\* p < .01

Table 3  
Test of Hypothesis Three

<b>Panel A: Analysis of Variance</b>			
Dependent variable: Control reliability rating			
	<u>Degrees of Freedom</u>	<u>Sum of Squares</u>	<u>F-statistic</u>
Model	3	37.86	9.76 ***
Error	77	99.56	
Management reliability rating	1	29.97	23.18 ***
Rated control objectives	1	0.28	0.22
Interaction	1	8.33	6.45 ***

<b>Panel B: Cell Means</b>			
	Low management reliability rating	High management reliability rating	Marginal mean
Did not rate importance of control objectives	4.5 n = 21	5.1 n = 19	4.8
Rated importance of control objectives	4.0 n = 26	5.9 n = 15	4.9
Marginal mean	4.3	5.5	
	t = 1.59	t = 1.97 *	t = 0.47

\* p < .10; \*\* p < .05; \*\*\* p < .01

Table 4  
Influence of Experience and Attention-Directing Procedures on Halo Effects

Ordinary Least-Squares Regression  
Dependent variable = Judgment bias from halo effects <sup>(a)</sup>  
r-square = .08; f-statistic = 6.71 \*\*\*

	<u>Parameter</u> <u>Estimate</u>	<u>Standard</u> <u>Error</u>	<u>T-statistic</u>
Intercept	0.54	0.13	4.16 ***
Rated control objectives	0.69	0.21	3.22 ***
Months at senior rank	- 0.30	0.01	3.31 ***

- (a) Difference between participant rating for control reliability and expected value for control reliability ratings based on all responses. Calculated as participants' control reliability rating minus the sample mean of 4.8 for high-management-assessment group, and 4.8 minus participants' control reliability rating for the low-management-assessment group.

\* p < .10; \*\* p < .05; \*\*\* p < .01

Figure 1  
Influence of Auditor Experience on Control Reliability Ratings

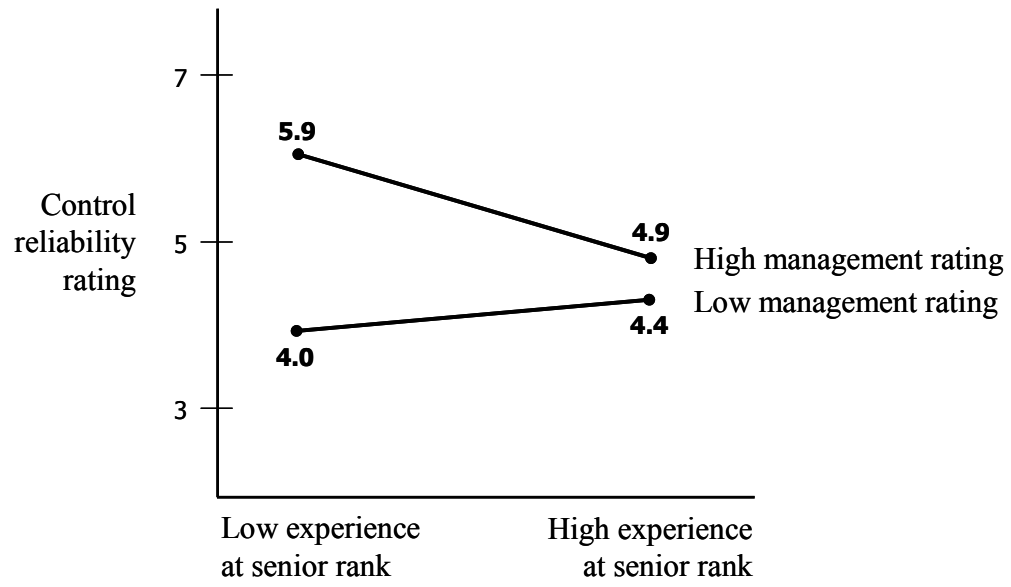


Figure 2  
Influence of Attention-Directing Procedures on Control Reliability Ratings

