Judgment and Decision Making Research in Auditing: 
A Task, Person, and Interpersonal Interaction Perspective 

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Abstract

This paper discusses judgment and decision making research in auditing—i.e., research that uses a psychological lens to understand, evaluate, and improve judgments, decisions, or choices in an auditing setting. Much of this work uses the laboratory experiment approach, but we will also cover related studies that use survey and field study approaches. We classify extant auditing JDM literature as covering three broad areas: (a) the audit task, (b) the auditor and his/her attributes, and (c) interaction between auditor and other stakeholders in task performance. We use this task, person, and interaction categorization to assess the cumulative knowledge generated in the past 25 years, as well as to identify knowledge gaps and opportunities for future research.
INTRODUCTION

This paper discusses judgment and decision making research in auditing—i.e., research that uses a psychological lens to understand, evaluate, and improve judgments, decisions, or choices in an auditing setting. Much of this work uses the laboratory experiment approach, but we will also cover related studies that use survey and field study approaches.

We note that several review papers already cover the period intended by our paper (Libby and Lewis 1982; Libby and Luft 1993; Solomon and Shields 1995; Libby 1995; Solomon and Trotman 2003). These reviews vary in terms of how they categorize prior research. For example, Libby and Luft (1993) organize the literature in terms of the effects of knowledge, ability, motivation and environment on performance. Solomon and Shields (1995) and Solomon and Trotman (2003) divide the literature into the following topics: multiperson judgment; heuristics and biases, knowledge and memory; probabilistic judgment; environment and motivation, and policy capturing.

We classify extant auditing JDM literature as covering three broad areas: (a) the audit task, (b) the auditor and his/her attributes, and (c) interaction between auditor and other stakeholders in task performance. We use this organization because these three features—task, person, and interpersonal interaction—are integral features of the auditing setting. Auditors need to perform a variety of tasks to form an overall assurance or attestation opinion. To do so, various personal attributes of the auditor (e.g., skills and personality) influence the outcome. In the process of applying these personal attributes towards the performance of the task, auditors interact with other auditors and stakeholders of the firm. Thus, we believe that this task, person, and interaction categorization provides a useful lens with which to assess the cumulative
knowledge that we have gathered in the past 25 years, as well as to identify knowledge gaps and opportunities for future research.

In our review, we primarily consider papers published in major accounting journals such as The Accounting Review, Journal of Accounting Research, Contemporary Accounting Research, Accounting, Organizations and Society, and Auditing: A Journal of Practice & Theory (AJPT), as well as selected working papers, to make sure that our review accurately reflects the major contributions that we believe have been made to the auditing JDM literature within the past 25 years and focuses also on the areas where we think current research is heading. Given that AJPT is a specialist journal focused on auditing papers, we have a special interest in noting areas where AJPT papers had an impact. Thus, we use data from Krogstad and Smith (2003), who identified widely cited AJPT work, to identify AJPT JDM work related to our framework. Our coverage of papers in all journals is not meant to be comprehensive, but rather will highlight those that fit our framework and help us bring out the framework’s features.

THE AUDIT TASK

Auditors perform a variety of tasks to arrive at an audit opinion pertaining to the financial statements.1 Our review of research on audit tasks indicates that much of the research activity is inspired by the issuance of professional standards and/or professional interest in the area. In particular, we noted much activity related to (1) risk assessments, including the audit-risk model and related audit planning decisions, (2) analytical procedures and evidence evaluation, (3) auditors “correction decisions” regarding whether to require clients to book proposed adjusting

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1 Bonner and Pennington (1991) and Abdolmohammadi (1999) provide excellent analysis of audit tasks and their components.
journal entries, and (4) going concern judgments.\textsuperscript{2} We discuss research relevant to each of these tasks below, recognizing that much useful research addresses other audit tasks as well.\textsuperscript{3}

**Risk Assessments, the Audit Risk Model, and Audit Planning**

Pronouncements by standard setters had a major impact on prior research related to risk assessments. Here, the AICPA’s conceptualization of the audit risk model (SAS No. 39, SAS No. 47) motivated much research. One contentious issue related to this model pertained to the validity of the assumptions used in the model, and some of the most important early analytical and thought pieces relating to the issuance of SAS No. 39 in 1981 were published in the *AJPT* (Cushing and Loebbecke 1983; Kinney 1983).

Research also assessed, through both laboratory experiments and field studies, whether the multiplicative form (and an independent relation between inherent risk and control risk) is descriptive of how auditors actually make risk assessments (e.g., Waller 1993; Dusenbury et al. 1996; Messier and Austen 2000). Results on this issue seem to be research-method specific. Field studies using archival data (e.g., Bédard 1989; Waller 1993; Mock and Wright 1993) generally fail to find an association between inherent risk and control risk. In contrast, laboratory experiments (Libby et al. 1985; Dusenbury et al. 1996; Messier and Austen 2000) document an association (see related work on configural information processing by Brown and Solomon 1990, 1991; Maletta and Kida 1993).

Explaining this seemingly inconsistent finding between field studies using archival data and laboratory experiments is an important avenue for future investigation. For instance, Houston et al. (1999) find that the audit risk model is descriptive of auditors’ audit planning

\textsuperscript{2} We also note much research activity in the area of fraud detection. Two very recent reviews on this topic are covered by Nieschwietz et al. (2000) and Wilks and Zimbelman (2003).

\textsuperscript{3} As noted by Solomon and Shields (1995), another way to view tasks is more from the perspective of the generic cognitive processes that they involve.
decisions when material misstatements involved errors (unintentional misstatements), but not when they involved fraud. Their experimental findings suggest that the audit risk model could be incomplete or non-descriptive of auditor judgments in the presence of fraud. It also suggests that studies using archival data that do not separate firms according to whether they have a higher propensity towards fraudulent activities may invite noise in their analysis of the descriptive validity of the audit risk model.

Similarly, studies that examine the effects of task structure offer opportunities to understand how audit firms can influence judgments like risk assessments. For example, Jiambalvo and Waller (1984) perform an experiment in which some auditors made an overall evaluation of test of details risk (an element of detection risk), while others used a decomposition approach to make assessments of different components in the audit risk model along with the same overall evaluation. Jiambalvo and Waller (1984) found no difference in the overall test of details risk between the two groups, but found that the judged overall test of details risk was different from that obtained by an algorithmic combination of the separate risk components made in the decomposition approach. This study was not designed to understand how different firm practices might affect risk assessments, but nevertheless, it provides a good illustration of an approach that can be used to examine this issue. For instance, some firms may indeed require auditors to use a decomposition approach for making risk assessments, some may require a holistic approach, and others may simply require auditors to evaluate one or more risk components and set the other components at default values. Understanding how firms approach risk assessments allow the experimentalist to simulate the core aspects of these approaches in the laboratory setting, and isolate the effects of these seemingly innocuous variations in risk assessment approaches. Jiambalvo and Waller’s (1984) study is also important in terms of
identifying the decomposition approach as a way of improving audit judgments—later papers by Bonner et al. (1996) and Zimbelman (1997) continue to consider its advantages. This area of research continues to be fruitful, given that amendments to risk assessment standards (e.g., AICPA 2004) continue to allow separate assessment of inherent risk and control risk for purposes of determining risk of material misstatement.

Related to the risk assessment literature is the literature on audit planning. One characterization of many audit planning studies is that they extend analysis of various risk factors beyond risk assessments to audit resource allocation decisions. However, JDM research linking risk assessment and audit planning has provided mixed results. While Joyce (1976) and Mock and Turner (1981) identify a lack of consensus in auditors’ planning judgments, Gaumnitz et al. (1982) and Libby et al. (1985) provide evidence linking risk assessments with audit planning decisions. Similarly, Kaplan (1985) provides evidence that auditors’ assessment of internal control strength affects their audit planning judgments (budgeted hours spent on analytical procedures) more in dynamic environments and when internal control assessments are elicited explicitly. In an earlier study, Kaplan and Reckers (1984) provide evidence that auditors’ reliance on internal control questionnaire for purposes of audit planning is affected by their view of the organization’s commitment to high-quality controls.

An additional branch of the audit planning literature investigates the extent to which auditors’ audit-planning response to risk factors is moderated by other incentive factors. Gramling (1999) provides evidence that audit managers under high fee pressure rely more on internal audit’s work than do audit managers whose clients emphasize a concern for audit quality (see also Houston 1999). These studies highlight that the balance of auditors’ incentives for client retention vs. audit quality affect not only their correction decisions given that a
misstatement is detected, but also the audit planning decisions that determine whether a
misstatement is detected in the first place.

**Analytical Procedures and Evidence Evaluation**

The analytical procedures task received much attention in the late seventies when the
AICPA explicitly recognized its usefulness as a substantive test that can influence the
performance of other audit procedures (SAS No. 23), and also later on when the AICPA required
analytical procedures during the planning and final review stages of the audit (SAS No. 56).
Asare and Wright (2001) provide a recent review of design issues related to research on
analytical procedures.

An early work by Biggs and Wild (1984) provided much descriptive evidence about the
analytical procedures context. Their survey results highlight the prevalence of analytical
procedures, the various procedures used in practice, and their importance for early detection of
financial-statement errors. Later work by Hirst and Koonce (1996) and Blocher et al. (2002) also
shed light on the specific analytical procedures that are used in practice. We believe more work
is necessary to consider how these approaches are evolving in audit practice.

In general, researchers tend to examine relatively simple analytical procedures tasks and
focus more on the cognitive processes that auditors use when performing those tasks. Koonce
(1993) reviews prior analytical-procedures research and identifies whether studies examine
mental representation of the analytical procedures problem, hypothesis generation, information
search, hypothesis evaluation, and action/decision. Koonce emphasizes that these processes are
linked in the diagnostic, sequential, and iterative judgment process that underlies analytical
procedures. Libby (1985) first highlighted the perspective that the analytical procedures is a
diagnostic task, while also investigating the role of experience in explaining hypothesis
generation and developing a ratio-analysis case that many subsequent papers used to extend this perspective. Later work closely related to Libby (1985) examined such issues as the use of experience-gleaned frequency knowledge when hypothesizing and evaluating error explanations for analytical procedures evidence (Butt 1988; Libby and Frederick 1990; Kaplan et al. 1992; Nelson 1993) and the effect on likelihood judgments of considering alternative explanations for analytical procedure findings (Heiman 1990; Koonce 1992).

Koonce’s (1993) framework is useful for characterizing other studies that examine analytical procedures. Several studies examine how explanations provided by clients affect auditors’ hypothesis generation and evaluation. In general, these papers provide evidence that correct and complete management explanations are helpful, particularly to auditors with much domain-specific experience (Bedard and Biggs 1991). Auditors also generally do attend to source credibility, though perhaps not sufficiently (Hirst 1994; Anderson et al. 1994; Bernardi 1994). However, they may also give undue credence to client representations (e.g., by anchoring on client-provided book values for purposes of expectation formation; see Kinney and Uecker 1982; McDaniel and Kinney 1995), and fail to quantify explanations to determine explanation sufficiency (Anderson and Koonce 1995; 1998). Auditors over-rely on the results of imprecise aggregate analytical procedures particularly when these procedures indicate no additional follow-up is needed (Glover et al. 2005). Auditors tend to treat hypotheses independently when evaluating them (Asare and Wright 1997), and once auditors fail to generate the correct hypothesis, it can be difficult for them to recover and consider correct explanations (Bedard and Biggs 1991; Bierstaker et al. 1999), in part because incorrect initial hypotheses can interfere with the generation of later correct hypotheses (Anderson et al. 1992).
We believe it is particularly important for researchers to consider how analytical procedures are changing in response to recent changes in the audit setting. Some audit firms have advocated using a more risk-based, business audit approach that focuses on strategic assessments to determine risks for use in the planning and performance of the audit (Bell et al. 1997), and auditing standards likewise encourage a holistic risk assessment (AICPA 2004). This approach entails consideration of the risks associated with the strategy and business processes of the client’s operations, and analytical procedures necessarily play a major role in this audit approach. Kotchetova (2004) provides evidence that a strategic-assessment approach affects the number of risks documented and the relationships between different elements of the audit risk model. We hope additional studies examine this important topic. Given this new approach to examining analytical procedures, a natural question is whether Koonce’s (1993) model of analytical procedures is still applicable. We believe another interesting direction for future work is to better understand how audit firms’ use of analytical procedures vs. other audit procedures has changed in the post-Sarbanes Oxley (SOX) reporting climate.

**Correction Decisions**

Fundamental to the audit function are auditors’ decisions about whether or not to require a client to correct a detected misstatement. These decisions often hinge on assessments of materiality (SAS No. 47), and their importance is highlighted by recent requirements that auditors communicate to each client’s audit committee concerning any waived audit adjustments (SAS No. 89).

Several studies examine auditors’ decisions about whether or not to require a client to change an accounting treatment when evidence suggests that a different accounting treatment might be more appropriate (hereafter, this is called “the auditor’s correction decision”). We view
this category of studies as including those that require auditors to interpret evidence with respect to whether a particular account is misstated, as well as those that examine whether auditors require a client to book an adjusting journal entry that the auditor has proposed. Also, as much of this decision depends on the auditor’s assessment of the materiality of the misstatement, research on auditors’ materiality judgments is also relevant to this issue (for reviews of materiality research, see Holstrum and Messier 1982, and Messier et al. 2005).

A pioneering paper on this topic was written by Farmer et al. (1987). They present 75 auditors with a description of a client that is taking a novel accounting approach (without stating the accounting issue or related evidence). Farmer et al. (1987) find that auditors are more likely to require their client to change their accounting treatment when the risk of litigation is high and the risk of client loss is low, and that more experienced auditors tend to be more likely to require change. They also provide sort-task evidence indicating that more experienced auditors tend to believe that independence is less compromised by economic considerations.

Several AJPT papers further explore the relation between auditors’ incentives and their correction decisions, enhancing the fidelity of the decision task and investigating the effects of other potentially important variables. For example, Trompeter (1994) provides evidence that differences in GAAP restrictiveness tend to have a larger effect on the correction decisions of auditors who are compensated more according to local office revenues. The experiment did not provide an opportunity for subjects to structure transactions to circumvent restrictive GAAP, so this result does not examine that possibility. Haynes et al. (1998) examine auditor correction decisions with respect to a possible inventory write-down by an acquiree, varying client identity (acquirer, acquiree) and salience of client interest (high salience is where client expressed concern). They found that salience increased the effect of client preference, particularly when
auditors were more experienced, and that large-firm auditors tended to respond more conservatively than did small-firm auditors, particularly when auditors were more experienced.

This area of research also has attracted much attention in recent years. Some studies employ field questionnaires (e.g., Beattie et al. 1999; Gibbins et al. 2001; Nelson et al. 2002; 2003), while others use experimental methods (e.g., Hackenbrack and Nelson 1996; Salterio and Koonce 1997; Nelson and Kinney 1997; Libby and Kinney 2000; Braun 2001; Hronsky and Houghton 2001; Beeler and Hunton 2002; Kadous et al. 2003; Moore et al. 2003; Ng and Tan 2003; Trotman et al. 2004; Nelson et al. 2004). As reviewed more completely in Nelson (2004), all of these studies examine some aspects related to the relation between auditors’ incentives and their correction decisions. In general, they provide evidence that auditors are more likely to make correction decisions that favor their clients when the balance of auditors’ incentives favor the client and when some latitude exists that enables the auditors to justify the client-favored treatment.

Given current interest in financial reporting aggressiveness and the fast pace of regulatory change in this area, we should expect continued research on this topic. We believe that many of the most interesting research directions involve more specific consideration of interaction between auditors and other participants in the financial reporting process.

**Going Concern Judgments and Opinion Modification**

Various standards and pronouncements related to going concern decisions (e.g., Commission on Auditors’ Responsibilities 1978; SAS No. 34; SAS No. 59) had a direct impact on research on this issue. We divide such research into two categories. One category of research recognized the importance of the going concern assessment, and used it as a context for examining psychological phenomenon related to sequential processing and order effects (Ashton
and Ashton 1988), consistency effects (Tan 1995), justification effects (Cushing and Ahlawat 1996); accountability (Lord 1992; Kennedy 1993), and pre-decisional distortion (Wilks 2002). These studies contribute jointly to our understanding of the psychological phenomenon involved and auditors’ going concern judgments.

The second category of research focuses on better understanding the nature of the going concern task. A few studies take this approach, and a distinctive feature of these studies is that they are motivated by the objective to aid policy makers and practice. Studies by Libby (1979) and Kida (1980) were particularly influential, being published at a time when there was significant debate over whether the subject-to opinion (including those issued for going concern uncertainties) should be eliminated. Libby (1979) found that bankers’ risk assessments were uninfluenced by the inclusion of a subject-to opinion. Kida (1980) showed that audit partners were able to use accounting ratios to discriminate firms with going concern problems, but that their qualification decisions were less accurate. This suggests either a difference between judgment and choice, or that auditors consider other factors in determining whether to qualify an opinion. Mutchler (1984) extended Kida (1980) by showing that the audit partners she surveyed indicated that they used different variables in identifying companies with going concern problems and in issuing going concern opinions. She also found differences in their perceptions of auditors’ role in assessing going concern of the client, which provided an explanation for why the Auditing Standards Board was encountering difficulties seeking support for its proposal to eliminate the subject-to opinion.

Understanding an audit task and how auditors perform this task requires detailed analysis of the task, and the cognitive inputs to the task. Biggs et al. (1993) is an example of studies that incorporate these aspects. They discuss a computational model of how different knowledge types
(e.g., knowledge of financial measures vs. knowledge of company operations) enter into the going concern judgment formation process. Rosman et al. (1999) is another paper that focuses on understanding how auditors make going concern decisions (as opposed to using going concern as a context). They use a computer process-tracing approach in their experiment, to identify information acquisition and going concern judgments across various task settings.

Although research on going concern assessments has a fairly long history, a fundamental issue that was first raised by Kida (1980) twenty years ago remains: to the extent that auditors can discriminate between failure and non-failure firms, why isn’t this insight reflected in their audit opinions, and to what extent is this phenomenon a cognitive issue (judgment vs. choice) vs. a motivational/incentives issue?

Given that much archival research addresses audit opinions, additional JDM research on opinion modification can offer converging evidence and potentially explain puzzling archival results by capitalizing on the comparative advantages of the experimental approach—use of controlled settings, manipulation of key constructs, and randomization (see Libby et al. 2002 for a discussion). Joe (2003) provides an excellent example. The motivation for her study is a puzzle found by Mutchler et al. (1997): Wall Street Journal coverage of a client’s debt default was associated with greater likelihood of modified audit opinions but had no effect on the client’s probability of bankruptcy. An explanation offered is that auditors are strategic—auditors issue modified opinions to reduce their increased litigation risk exposure arising from press releases. An alternative explanation is a cognitive one – that repeated exposure to a redundant cue (risk of default) through press releases makes it more salient. Joe (2003) was able to discriminate between these two competing explanations through the power of an experiment.
Joe’s (2003) study shows how triangulation of methods can push the field forward. It would have been difficult for research using archival data to perform a clean test to discriminate between the strategic and cognitive explanations. Measuring auditors’ litigation risk assessment would have been critical, but to use archival data, researchers would need access to audit firms’ working papers and auditors in the field would have had to document some assessment of litigation risk. Both these conditions would have been difficult to satisfy. Even if such archival working papers existed, there are the issues of correlated omitted variables and natural confounds among firm characteristics.

Audit Task -- Conclusion

JDM research in auditing is grounded in the world of practice, and it is incumbent on researchers to shed insights on the tasks that auditors perform and on emerging audit practices. We referred to the business audit approach (Bell et al. 1997) as one that has been advocated recently, but there has been little evidence on the efficacy of this approach vs. its predecessor audit approach. A recent paper by Ballou et al. (2004) is a step in the right direction, and assesses whether there are limitations to the business audit approach (see also Kotchetova 2004). Similarly, the audit review process has been undergoing changes in terms of flattening the traditional hierarchical structure, and being more online and real-time. Some studies (e.g., Wilks 2002) provide evidence on the implications of this shift, but there has been no study that directly compares different forms of audit review process. Finally, there presumably have been large changes in audit practice in response to recent shifts in regulation and new requirements promulgated by the Public Company Accounting Oversight Board (PCAOB). Much research will be necessary to document and understand how auditors are fulfilling their new responsibilities.
THE AUDITOR

Auditors bring to bear on an audit task their individual characteristics (e.g., knowledge, ability, and personality), and cognitive limitations that leave them susceptible to judgmental biases. Research relating to these auditor attributes has a long and enduring tradition in auditing, and for good reason. If the auditing context involves professional judgment, then it is of both theoretical and practical interest to investigate the effects of these auditor attributes. We focus our review on four topics: (1) auditor knowledge and expertise, (2) other individual characteristics, (3) cognitive limitations, and (4) decision aids designed to supplement or make good some deficiency in an auditor attribute, and thereby improve auditor performance.

Auditor Knowledge and Expertise


In this review, we offer a perspective of how the literature has progressed over the past two to three decades by referring to the more frequently cited AJPT papers. Given the vast amount of reviews on this topic, we then focus more on papers that have appeared after these review papers (particularly, post Libby and Luft 1993 and Libby 1995).

In the early eighties, much interest was centered on differences between auditors and novice students. Ashton and Kramer (1980) first found that students behave similarly to auditors in terms of measures such as cue utilization, consensus, and consistency, but later studies like Messier (1983), Krogstad et al. (1984) and Biggs et al. (1987) found differences between these two groups of participants. Krogstad et al. suggested that task complexity and knowledge
differences required for different tasks could explain the discrepant results between their study and Ashton and Kramer’s, paving the way for Bonner’s (1990; 1991) subsequent work highlighting that choice of tasks and participants determine whether a researcher can identify expertise effects (Abdolmohammadi and Wright 1997). Biggs et al.’s (1987) protocol study provided the first published evidence of analogical reasoning by experienced auditors, and added to our knowledge of expertise effects in auditors’ analogical reasoning that Marchant (1989) developed further.

Later research used two main approaches to study expertise. Frederick and Libby (1986) first outlined principles for studying expertise that later became known as the “expertise paradigm,” and which had significant influence in subsequent work on auditor expertise (e.g., Bonner 1990; Frederick 1991). The focus of these studies was to vary both knowledge and task to reveal expertise via a knowledge x task interaction. Bonner and Lewis (1990) first used a psychometric approach for studying expertise, providing systematic evidence that experience was not equivalent to expertise, and identifying various types of knowledge (world knowledge, sub-speciality knowledge, etc) that contributed to expert performance. Libby and Luft (1993) unified these perspectives with a model of auditor expertise where experience leads to opportunities to acquire knowledge, and knowledge together with ability, influences auditor performance.

A natural progression of the expertise literature is to move from investigating task-specific knowledge and sub-specialty knowledge (Bonner and Lewis 1990) to industry-specific knowledge and expertise. Bedard and Biggs (1991) can be viewed as an early example of the beginning of this stream of research. Using a controlled setting, they found that auditors with greater specific manufacturing experience or specific experience in auditing industries that
involved physical inventory (e.g., wholesale, retail, manufacturing) were better able to identify an error related to inventory. Later studies by Wright and Wright (1997), Solomon et al. (1999), Taylor (2000), Owhoso et al. (2002), and Low (2004) show additional knowledge benefits to industry specialization, while Ramsay (1994) provides evidence that some aspects of technical competence (or at least focus on workpaper documentation) appear to fade when auditors progress to experience levels that utilize that attribute less.

Up till the mid-nineties, evidence on auditor expertise had been predominantly been obtained using laboratory experiments and surveys, and risked the claim that effects documented were largely either an artifact of the laboratory settings or the imprecision of survey perceptions. Using actual performance evaluation data, Tan and Libby (1997) combined field data with psychometric measures in a controlled setting, and provided triangulation of findings by demonstrating expertise effects in the field. Based on Wagner and Sternberg’s (1985) work, Tan and Libby (1997) also assessed the importance to auditors of tacit managerial knowledge, which is job knowledge (not typically taught in school) on how to manage self, others, and career in a job setting. They found that tacit managerial knowledge, but not technical knowledge, was the major factor that differentiated top audit managers from mediocre ones.

The study by Tan and Libby (1997) signaled a move by the audit expertise literature away from the exclusive focus on technical knowledge and performance on strictly technical tasks (e.g., analytical procedures and internal control evaluation tasks have been common tasks used to examine expertise effects). Auditors perform a wide spectrum of tasks that vary from strictly technical tasks to tasks that involve the management of people, budgets, and their own reputations. We see promise in identifying determinant of success in these tasks. Kennedy and Peecher (1997) is a good example of this genre of research, examining whether audit managers
and seniors are differentially overconfident in their ability to assess the technical knowledge of their immediate subordinates (who are, respectively, seniors and staff auditors). They posited and found that audit managers are less overconfident about the technical knowledge of their immediate subordinates than do seniors, suggesting that managers are better able than seniors to match subordinates with particular skill sets to the task.

Audit expertise research is important in part because we want to know why and how superior performance is attained, and the nature of an auditor’s transition from a novice to an expert. Thus, research on how novices acquire knowledge and attain superior performance is important. Despite its importance, few auditing studies focus on this issue (for notable exceptions, see Bonner and Walker 1994 and Earley 2001). Auditors work in teams, and are grouped by industry expertise. How do team composition and structure influence expertise development? How does the expertise of auditors having similar vs. different industry expertise collectively add to or subtract from a team judgment? Little research has investigated these issues.

**Individual Characteristics**

This area of research investigates the relation between performance and some aspect of personality and/or cognitive characteristics (which we call individual characteristics) in largely experimental settings. The area was popular in the 1970s, but became less popular after that due to concerns over validity of some of these constructs and poor theoretical foundations for incorporating these variables (see comments by Libby 1981; Ashton 1982). Ho and Waymond (1993) provide a comprehensive review of this literature.4

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4 The issue of ethical reasoning can be considered to be part of an auditor’s personal characteristics. See Jones et al. (2003) for a recent review of this literature.
The use of individual characteristics did remain popular in studies that focused on aspects of auditor employment, typically using surveys or field experiments. Examples of papers published in *AJPT* include Harrel et al.’s (1986) survey of how organizational commitment and professional commitment influence internal auditors’ job satisfaction and turnover intention, Lightner et al. (1982) survey examining chargeable hour under-reporting behavior (including Kelley and Margheim’s (1990) related experimental research), as well as Choo’s (1986) field study of how different individual characteristics (Type A personality, locus of control, commitment, and cognitive structure) influenced job stress.

The use of individual characteristics in experiments and quasi-experimental studies experienced a renaissance of sort in the nineties, popularized in part by Bonner and Lewis (1990) use of a psychometric measure of problem-solving ability as a determinant of auditor performance. Such a measure was subsequently used in various studies in the area of auditor expertise (Tan and Libby 1997; Tan and Kao 1999). A more recent study shows that auditors’ performance is enhanced when there is a fit between auditors’ locus of control and the firm’s audit structure (Hyatt and Prawitt 2001).

We suggest that the following principles should be considered in thinking about the usefulness of studies involving individual characteristics: (i) relevance of individual characteristic to the issue; (ii) presence of theory linking the individual characteristic to the task at hand; (iii) validity and reliability of the individual characteristic construct; and (iv) ease with which the individual characteristics can be captured in practice. We illustrate these principles using the study by Pincus (1990). In her experiment, she used a case based on an actual audit where auditors failed to detect inventory that had been overstated by management, even though cues were available to detect the fraud. Participating auditors were required to indicate whether
Pincus (1990) measured three individual characteristics: field independence-dependence, which refers to the extent to which a person can get to the key issue from a complex and potentially misleading context; category width, the extent to which a person makes narrow or broad categorizations of available information; and ambiguity tolerance-intolerance, the extent to which a person is at ease with ambiguity. She finds that people who are more field independent (i.e., able to get to the key issue) and who are ambiguity-intolerant (i.e., uncomfortable with ambiguous situations) were more likely to indicate that the inventory account was not fairly presented.

Pincus’ study satisfies the first principle, since the importance of fraud detection and evidence of auditor difficulty with the task suggests that we would care about evidence that auditors with particular characteristics are better able to detect fraud. In some respects Pincus’ study satisfies the second principle since there seems to be a good foundation to expect a relation between field dependence-independence and fraud detection, but it is less clear that category width or ambiguity tolerance would be expected to influence fraud detection. Pincus’ study satisfies the third principle, as the individual characteristic constructs used are well established in the psychology literature, and the reliability of these measures is quite high. From the perspective of the fourth principle, it appears that auditing firms could use measures like those used by Pincus to capture these constructs, but they don’t appear to do so at present. From an effectiveness and efficiency standpoint, it might be more useful to rely on measures that they already have some information about, like problem solving ability, which is assessed during performance appraisals and which would seem to be similar to field dependence.

Cognitive Limitations
When auditing JDM research started in the early 1970s, the dominant focus was on the application of the lens model and normative models (e.g., Bayes’ theorem or utility theory) as benchmarks against which to understand auditors’ information processing. Extensive reviews of this work have been written by Libby (1981) and Ashton (1982). Throughout the 1980s and early 1990s, there was much interest in whether auditors were cognitively limited and susceptible to heuristics and biases described in the psychology literature, most notably those identified by Tversky and Kahneman (1974) (e.g., anchoring and adjustment, representativeness, base rate neglect). The general conclusion, after more than a decade of research in this area, is that while there is some evidence that auditors employ these heuristics and are susceptible to biases, they exhibit less bias than do students in the psychology literature when performing realistic auditing tasks (see reviews by Smith and Kida 1991; Solomon and Shields 1995). In particular, Smith and Kida (1991) provide a comprehensive review of audit judgment research related to heuristics and biases, including those related to anchoring, calibration, base-rate neglect, representativeness, sensitivity to sample size, confirmatory bias, and source credibility.

Another issue that witnessed much research interest between 1980s to the mid 1990s related to auditors’ numerical interpretation of probability phrases (e.g., possible vs. probable). This is also an issue where AJPT papers were more frequently cited. This stream of research was motivated by professional standards and audit firms’ engagement tools that used such probability phrases, and the concern that miscommunication may result from inconsistent interpretation of such phrases. For example, SFAS No. 5 on accounting for contingencies suggests different disclosure options as a function of whether contingent losses are remote, reasonably possible, or probable. Schultz and Reckers’ (1981) study provided early evidence on auditors’ interpretation of these probability phrases, finding that auditors assigned a relatively high probability (up to 40
percent chance of occurrence) to a material contingent loss that was deemed “remote.” Jiambalvo and Wilner (1985) extended Schulz and Reckers (1981), and provided a systematic investigation of how individual auditors assign probability ranges to probability phrases, and whether their disclosure recommendations were consistent with their probability ranges. They detected significant inconsistencies across auditors in terms of the probability ranges assigned to probability phrases, and also in terms of their associated disclosure recommendations. As another illustration, SAS No. 47 indicates that audit risks can be assessed either in quantitative or qualitative terms, which presumes that these expressions are equivalent. Contrary to this assumption, Reimers et al. (1993) found systematic differences in control risk assessments made using numerical probabilities versus verbal phrases. Finally, another group of studies examine how auditors interpret probability phrases in general, and find that many probability phrases used in current standards share similar numerical probability interpretations but are interpreted with relatively high variance, both among auditors and between auditors and non-auditors (Reimers 1992; Amer et al. 1994; 1995).

In the late 1980s to the mid-nineties, there was significant research activity testing the descriptiveness of Hogarth and Einhorn’s (1992) belief-adjustment model. This model posits that people update beliefs using a sequential anchoring and adjustment process. A key prediction is that recency effects occur for short series of complex, mixed evidence. Ashton and Ashton (1988) was the first study to provide evidence that auditors do exhibit recency effects consistent with this prediction, a finding that was, in general, supported by subsequent studies (Tubbs et al. 1990; Asare 1992). Other studies assessed whether recency effects were moderated by factors such as experience (Krull et al. 1993), the review process (Messier and Tubbs 1994), and accountability (Kennedy 1993).
The dilution effect is another cognitive bias that attracted research attention in the 1990s. A dilution effect is said to occur when judgments made in the presence of both diagnostic and non-diagnostic information are less extreme than those made only in the presence of diagnostic information (Nisbett et al. 1981). Normatively, judgments should only be influenced by diagnostic evidence, not non-diagnostic evidence. Hackenbrack (1992) provided the first evidence that auditors are susceptible to this bias. His work spawned at least three other major extensions. Glover (1997) found that time pressure reduced but did not eliminate the dilution effect, while accountability had no effect on dilution. Time pressure has previously been associated with adverse effects on auditors’ performance (McDaniel 1990). Glover’s results are interesting in that they show that the harmful effects (observed separately) of two institutional features – prevalence of non-diagnostic evidence and time pressure – offset each other when they interact together. In a related study, Hoffman and Patton (1997) replicated Glover’s (1997) results of a non-effect of accountability on the dilution effect, and additionally showed that accountability led to more conservative risk assessments. Shelton (1999) showed that managers and partners were less vulnerable to dilution effects than were the seniors examined in prior research, suggesting that more experienced auditors may be able to mitigate this bias through the audit review process.

We suggest a few guidelines that researchers could take note of in investigating some aspect of an auditor’s cognitive limitations. First, demonstration of a judgment deficiency would be of interest, but it is crucial that the study be motivated from an auditing perspective. For example, Hackenbrack’s (1992) study was a first demonstration of the dilution effect in an auditing context, and it also had a strong auditing context: auditors encounter both diagnostic and non-diagnostic evidence when performing tasks like fraud-risk assessment in practice, so it is of
interest to know if their judgments are “diluted” as a result. Second, additional studies can contribute by identifying how the deficiency can be remedied or by identifying contexts where the judgment deficiency is reduced. Glover (1997) and Shelton (1999) are examples of studies that identify contexts where a judgment deficiency is reduced. Third, researchers provide evidence on “why” this deficiency occurs. As discussed further in the next section (on decision aids), researchers have a stronger basis to recommend a remedy for a deficiency when they know why the deficiency occurs in the first place. For example, Shelton’s (1999) experience-effect results are important because they suggest possible explanations for why dilution occurs. One possibility is that partners and managers have better technical knowledge and can better discriminate between diagnostic and non-diagnostic evidence. Another possibility is that it is not knowledge per se, but how information is processed, with partners and managers using a more diagnosticity-directed approach. This explanation would still suggest a rank effect, and is also consistent with the attention-driven explanation suggested by Glover’s (1997) finding that time pressure reduces dilution effect (because time pressure presumably forces attention to the more relevant evidence). Each of these explanations suggest different cures—training auditors in terms of what is diagnostic and non-diagnostic evidence in a particular task, versus training auditors in terms of evidence processing strategies.

**Decision Aids**

If particular auditors lack expertise or are susceptible to performance or cognitive deficiencies, then training or inclusion of better-performing auditors could improve performance. However, the use of decision aids is a potentially less-costly alternative, and can be viewed as an external mechanism designed to overcome some deficiency in an auditor’s attribute or performance. The use of decision aids is common in audit settings. Some decision aids are
relatively simple, such as checklists, audit programs and other aspects of audit software, some are embedded in professional standards, such as the audit risk model (SAS No. 47) and sample-size estimation tools (AICPA Audit Sampling 1999), and others are more complex, involving computerized models intended to mimic expert judgment (Messier 1995).

Perhaps the simplest decision aid is one that does not modify individual judgment, but rather allows auditors to interact without meeting face to face. Bamber et al. (1996) highlight that such decision support systems can be used to facilitate group decision making in auditing, which allows audit-firm resources to be aggregated for a particular client and encourages more thorough analyses and more acceptance of group decisions.

Another approach to decision aiding is to develop decision aids that target specific human judgment weaknesses (Bonner et al. 1996). This must be done carefully, as there are some tasks that humans perform better than mechanical aids, such that reliance on a decision aid can reduce judgment accuracy. For example, mirroring much psychology research indicating that humans are relatively capable at cue selection and cue measurement, Pincus (1989) provides evidence that auditors sometimes outperform checklists because they consider factors not included on the list. However, there are other tasks that decision aids can perform better, such as mechanical aggregation. Thus, a combination of human cue measurement and mechanical aggregation can outperform either human judges or decision aids (Einhorn 1972; Libby and Libby 1989; Simnett and Trotman 1989).

A challenge for decision aid effectiveness is getting decision makers to actually rely on the aid when doing so would improve their decisions, particularly given evidence that jurors assign more responsibility for an audit failure to auditors that overrode the recommendations of a high-quality aid than they did to auditors who made the same decisions but did not use an aid.
(Lowe et al. 2002). Eining et al. (1997) and Whitecotton (1996) provide evidence that a key determinant of whether or not a decision aid is actually used is the balance of confidence that an auditor has in the aid vs. the auditor’s own judgment. For example, Eining et al. (1997) show that an aid that provides an interactive “constructive dialog” (assessing and justifying individual judgment components) is relied on to a greater extent than is one that simply gives recommendations, and Whitecotton provides evidence that auditors with more confidence place less reliance on decision aids. Providing feedback on the inaccuracy of unaided judgment is one way to decrease confidence in self and therefore increase confidence in the aid (Nelson et al. 2003). Interestingly, reliance on even high quality decision aids can have a downside. Glover et al. (1997) demonstrate that reliance on decision aids can hinder novice auditors’ knowledge acquisition.

Another challenge associated with combining human judgment and decision aids relates to input bias that is designed to achieve predetermined outcomes. For example, following up on Kachelmeier and Messier (1990), Messier et al. (2001) provide evidence that auditors continue to “work backward” to create the inputs necessary to justify desired sample sizes under AICPA-mandated decision aids. This research highlights that decision aid effectiveness will depend on auditors’ incentives (c.f. Ashton 1990). Auditors who are more focused on efficiency than effectiveness may prefer small samples to representative samples.

At the far end of the decision-aid spectrum are expert systems which can mimic the judgments of very knowledgeable auditors. Messier and Hansen (1987) describe the “state of the art” of such expert systems as of 1987, and Messier (1995) updates that review. Messier and Hansen describe knowledge acquisition and benchmarking system accuracy as challenges to expert system development and implementation, and those challenges continue to exist today.
We believe that one important avenue for future research is to address how decision aids and decision support systems can be used to enhance independence and focus the expertise of large firms in the key areas for which they are most vulnerable to audit failure. For instance, an unfortunate aspect of the Enron debacle was that the concerns of Andersen’s professional standards group were ignored or mischaracterized by local practice auditors (Bryan-Low, *WSJ* 6/3/02). Future research can address how the interplay between auditor incentives, regulation and correction decisions is affected by decision aids that are either embedded in professional regulations or adopted voluntarily by audit firms.

On a related point, we believe it is interesting to consider the extent to which decision aids have been and are currently being used to enhance audit effectiveness and efficiency. To the extent that decision aids are used in place of audit effort, they may enhance efficiency but harm effectiveness. Our intuition is that the use of decision aiding approaches to enhance effectiveness may be increasing in the post-SOX reporting climate (see, e.g., Bell and Carcello 2000; Bell et al. 2002).

**Auditor Attributes – Conclusion**

We continue to see promise in research that investigates auditor attributes, and how these help or impede auditors’ performance. Increased public scrutiny on auditors’ work quality adds urgency to this line of research.

A notable omission in terms of current audit research relating to auditor attributes is that there have been few studies that directly examine how auditors’ affect or emotions influence audit performance. Auditors work under significant budgetary and time pressures particularly during the year-end audit, and it is likely that their affective states are influenced during this
period. Yet, we know little about the effects of affect in auditing settings, and how it interacts with cognitive and individual attributes in influencing auditors’ performance.

**INTERPERSONAL INTERACTIONS**

Many of the papers published in AJPT and elsewhere focus on the judgments and decisions of individual auditors. However, many also examine interactions between (1) auditors and other auditors, (2) auditors and their clients, and (3) auditors and other participants in the financial reporting process. Below we review papers relevant to each of these topics.

**Between-Auditor Interactions**

Auditors interact with each other as peers, superiors (reviewers), or subordinates (workpaper preparers) within the CPA firm. These interactions can lead to process gains in terms of audit quality, but they can also lead to process losses. For example, Bedard et al. (1998) provide evidence that groups in an analytical procedures context often exhibit process gains from knowledge sharing, but also exhibit process losses when group dynamics discourage full expression of individual group members’ information.

One of the most common forms of within-firm interactions, the audit review process, is an important quality control mechanism used in audit firms. It typically takes the form of a more senior auditor assessing the work quality of, and providing guidance to, a more junior auditor. Early research focused on judgment differences between individuals and audit teams, as well as the effects of different team structures (for a review see Solomon 1987; for early examples, see Trotman 1985; Trotman and Yetton 1985). Since then, much has been learned about the process gains that the reviewer *directly* brings to bear on the audit. For example, reviewers pay relatively more attention to evidence inconsistent with the preparer’s conclusion (e.g., Libby and Trotman 1993), and reviewers who are managers detect relatively more conceptual errors and fewer
mechanical errors than do those who are seniors (Ramsay 1994). Rich et al. (1997) reviews this literature.

Auditing research on accountability is arguably a spin-off from research on the audit review process. Beginning in the 1990s, there was recognition that the process gains arising from the audit review process do not necessarily arise directly from the reviewer. Rather, preparers are accountable to the reviewers (Tetlock 1983), and the prospect of a review is sufficient to induce greater vigilance among preparers. Two AJPT papers provided the first published evidence on this issue. Johnson and Kaplan (1991) showed that auditors who were accountable to a reviewer with unknown views exhibited better consensus and self-insight. Lord (1992) showed that auditors who were accountable to a partner with unknown views were more conservative by being more likely to issue a qualified opinion, and less likely to favor aggressive accounting positions. Another AJPT paper, Messier and Quilliam (1992), reviewed related psychology literature and emerging accounting studies on this issue, and outlined testable hypotheses. These studies complemented subsequently published studies which demonstrated similar effects on MBA students (Kennedy 1993) and auditors (Tan 1995).

Research investigating the effects of accountability arising from the interactive nature of the relation between reviewer and preparer can be classified according to which of four research questions are investigated. The first relates to the question: “to whom is the auditor accountable?” Here, Peecher (1996) provided the first evidence that the preferences of the reviewer matters. Wilks (2002) extended this work by providing evidence that reviewers’ preferences distorted the preparer’s memory for evidence. These studies are important because they show unintended adverse effects of the review process. Also, the auditor is generally accountable to multiple reviewers or stakeholders with different and perhaps conflicting
preferences, a phenomenon that is common, as pointed out in the survey by Gibbins and Newton (1994). Jensen (2004) shows that under conflicting accountability conditions, auditors are more likely to spend more time, consult others, and make less extreme decisions.

A second set of studies consider the nature of the accountability-inducing mechanism examined. Experimental manipulations vary in terms of whether auditors are instructed (a) to document their justifications for decisions made, with no instructions of an actual review (Ashton 1990); (b) that their responses will be reviewed by audit partners, with no explicit requirement to justify their decisions (Tan and Kao 1999); (c) to document their justifications, with a subsequent review by actual partners (Glover 1997); and (d) to document their justifications, be aware of partner’s review, and attend a small group session to justify their decisions (Johnson and Kaplan 1991). All of these mechanisms can be viewed as increasing in the amount of accountability induced, but each mechanism (written and private justification vs. oral and semi-public justification vs. awareness of review) can potentially have different effects in isolation and in combination with each other. The medium by which a review is conducted also matters. In a recent study, Brazel et al. (2004) show that the accountability-inducing effects of the prospect of a review worked only when the review was anticipated to be face-to-face but not when it was anticipated to be computer-mediated.

A third stream of research looks at the nature of justifications documented by preparers in anticipation of a review. We currently know that preparers increase the quantity of justifications when they are made accountable to a reviewer with unknown preferences (Koonce et al. 1995), and that auditors perceive that documented conclusions are more justifiable if the preparer consulted other peers within the firm (Kennedy et al. 1997). Auditors also use different forms of justifications depending on whether they are required to justify to a reviewer with similar or
dissimilar preferences (Shankar and Tan 2004). Workpapers are held as evidence in litigation, and understanding determinants of workpaper justifications as well as their justifiability is therefore important.

Finally, some studies look at the boundary conditions under which accountability operates. Accountability is not a remedy for all biases and performance deficiencies, and it is important to identify conditions under which it works (and doesn’t work). Kennedy (1993; 1995) identifies conditions under which judgment biases can be reduced with increased accountability. Others examine how improvements in performance through increased accountability can be limited by the skills of the auditor (technical knowledge, problem-solving ability) as well as the task demands (Tan and Kao 1999). This research agenda also represents an intersection between the accountability and expertise literature.

An important related literature examines strategic interactions between reviewers and reviewees. Although the audit review process is primarily a quality control mechanism, it also entails a performance appraisal component in that reviewers provide assessments of the preparer’s work quality (see Hunt 1995 for a review of research in performance appraisal). This aspect provides incentives for the preparer to manage his/her reputation in the eyes of the reviewer, and to strategically influence the reviewers’ view of the preparer. Comprehensive discussions of this perspective are found in Rich et al. (1997) and Gibbins and Trotman (2002). Research on the audit review process beginning in the mid-nineties focuses on this strategic interaction between reviewer-preparer. There is evidence that preparers are sensitive to the preferences of their reviewers (Peecher 1996; Turner 2001), and that preparers rate as more important evidence that is consistent with their conclusions (Ricchuite 1999). In turn, reviewers’ judgments are biased by the incompleteness of evidence documented by preparers (Ricchuite
1999), and their hypothesis generation and judgments are directionally influenced by the content of documented justifications (Yip-Ow and Tan 2000). However, there is also evidence that reviewers are able to “undo” and be vigilant to such preparers’ influence attempts for certain forms of stylizations (Tan and Yip-Ow 2001), depending on the reviewers’ knowledge and sensitivity to such attempts (Tan and Trotman 2003), and depending on the risks inherent in the audit (Rich 2004). What is currently unclear relates to whether preparers’ influence attempts documented in the extant literature are indeed attempts at managing reputations, or are merely reflections that preparers prefer a cognitively easy way out of audit tasks (or experimental tasks). In addition, there has been little evidence on whether preparers’ reputations are indeed enhanced as a result of these influence attempts. What we do know is that previously-established reputations of competence can continue to exert a positive “halo” effect on reviewers’ evaluations of the preparers’ work quality, although the effect is evident for the average manager and not the outstanding manager (Tan and Jamal 2001). Finally, a better understanding of conditions under which the audit review process can be compromised or enhanced as a result of preparers’ strategic influence attempts is also necessary to push the field forward.

**Auditor/Client Interactions**

As mentioned previously in this review, numerous papers published in *AJPT* and elsewhere have considered how auditors’ incentives affect their correction decisions, audit opinions, and other decisions. Those papers can be viewed as revealing an effect of auditor-client interaction, but do not study the interaction process itself. In this section, we consider two approaches that have been used to examine the interaction process: field-based questionnaires and practitioner-based experiments.5,6

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5 We do not separately discuss auditors’ interactions across different environments. Many environmental features are integral aspects of the task, or entail interactions of auditors with other parties. For example, Libby and Luft (1993)
Field-based questionnaires have provided much insight about the process by which auditors and clients negotiate over important accounting issues (for a review of field-based-questionnaire methodology, see Gibbins and Qu 2005). For example, Gibbins et al. (2001) build a model of auditor/client negotiation that focuses on the issue being negotiated, the negotiation process and negotiation outcomes, and use it to structure a questionnaire that elicits information about negotiations from audit partners. Using a similar questionnaire, Gibbins et al. (2005) complemented Gibbins et al. (2001) by validating the latter’s model using a CFO sample. Similarly, Beattie et al. (2000) obtain questionnaire responses from British audit partners and finance directors, and provide evidence of much negotiation regarding contentious accounting issues as well as other issues. Beattie et al. (2004) report the results of follow-up matched interviews involving finance directors and audit partners of six large British companies, and use those interviews to develop a model of auditor/client negotiation that emphasizes linkages between context, negotiation strategy and outcome.

Nelson et al. (2002, 2003) complement these papers by focusing less on the negotiation context and more on specific characteristics of the transaction issue being negotiated, the specific GAAP regulating the transaction, and the outcome of the negotiation. Results of their questionnaire provide evidence that the manner in which managers attempt aggressive accounting depends on the precision of relevant GAAP, and that auditors are most effective in thwarting management aggressiveness when there exists precise GAAP that precludes the managers’ preferred reporting position. Nelson et al. (2002) provide evidence of the effects of

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identify four characteristics of the accounting environment: technology, group processes, prior involvement, and accountability. Technology can be viewed as a key aspect of the task, while the remaining three characteristics involve auditor interactions with others.

6 Experimental economics papers also address auditor/client interactions, and early AJPT papers were instrumental in introducing this methodology to accounting, but the experimental economics literature is outside the scope of our review. For early AJPT examples of this work, see, e.g., Smith et al. (1987), Dopuch et al. (1989), and Kachelmeier and Wallin (1991).
various incentives, e.g., with managers more likely to attempt to increase current-year income but auditors less likely to allow current-year income to be increased, and auditors more likely to concede to their larger clients.

Field-based questionnaires provide much insight into the negotiation process, but with a necessary loss of experimental control. Practitioner-based experimental research has the advantage of greater control for purposes of testing causal hypotheses drawn from field-based work and the relevant psychology literature. However, practitioner-based experimental research on auditor/client interaction faces the formidable obstacle of access to subjects. Such negotiations typically occur between very experienced auditors and high-level client financial personnel, and it is difficult enough to get access to one of these subject groups, let alone to arrange negotiating dyads and observe interaction. Recent experiments have offered several approaches for dealing with this challenge.

One approach is to focus on one party to the negotiation and elicit their predictions of negotiation process and outcome (Libby and Kinney 2000). For example, Ng and Tan (2003) focus on auditors, and elicit their initial recommendation about appropriate accounting adjustments (similar to the amount that would be proposed to adjust the financial statements) as well as their beliefs about the eventual outcome of an accounting dispute with their client (similar to a belief about a negotiated outcome, as in Libby and Kinney 2000). Ng and Tan provide evidence that auditors’ “opening move” in the negotiation typically equals their “preferred outcome,” probably because auditors believe they can only propose adjustments that are valid according to GAAP. Ng and Tan also provide evidence that auditors are more likely to allow aggressive reporting in the presence of concessionary moves by the client, but are less
likely to allow aggressive reporting if there exists either authoritative guidance for a conservative position or a strong audit committee on the board to support the auditor’s position.

Sanchez et al. (2004) use a similar approach, but focus primarily on the client side of the negotiation, eliciting data from CFOs. They provide evidence that CFOs indicate greater willingness to record material adjustments when they are made aware that the auditor has already waived immaterial adjustments, and are more satisfied with and likely to retain the auditor. Thus, Sanchez et al. (2004) provide client-focused evidence that complements Ng and Tan’s (2003) auditor-focused evidence, with the two studies indicating that both auditors and clients are vulnerable to reciprocity norms.

Like the two earlier studies, Tan and Trotman (2004) examine negotiation strategies, but use another approach to simulating a negotiation-counterparty. In their experiment, CFOs interact via email with a hypothetical auditor who offers a pre-determined sequence and magnitude of proposed audit adjustments over a few rounds of actual negotiations. Unlike the studies described above, Tan and Trotman capture CFOs actual offers and counter-offers. They find that CFOs’ counter-offers to the auditors’ proposed audit adjustments to reduce revenue tend to be higher (i.e., more revenue-decreasing) when the auditor adopts a gradual or delayed concession strategy.

Similarly, Brown and Johnstone (2004) have auditors interact with a programmed client, and provide evidence about the effects of negotiation experience on auditors’ negotiation approach and outcome. Brown and Johnstone find that more experienced auditors are more contentious in their approach to negotiation (e.g., offering fewer bids and fewer monetary concessions), and that this approach pays off by resulting in lower final bids and higher satisfaction with negotiation outcomes. Moreover, Brown and Johnstone find that, while more
experienced auditors’ negotiation process and outcomes are unaffected by engagement risk, less experienced auditors are more likely to concede when facing a high engagement-risk client (who presumably will pressure the auditor more).

Trotman et al. (2004) have audit partners negotiate over an aggressive accounting position with a researcher confederate who plays the role of client management. They manipulate the extent to which auditors understand their client’s perspective, varying whether the auditor has played the client’s role in a prior negotiation, considered the client’s incentives and position, or not considered the client’s position. Their results indicate that auditors benefit from considering the client’s perspective. It is interesting to note that Trotman et al.’s (2004) central thesis is that auditors are considering insufficiently their client’s perspective, when much of the incentive-related research suggests that auditors may consider client wishes to too great an extent.

We believe that much work remains before researchers completely understand the process of auditor/client negotiation, particularly as practice changes to involve audit committees and various forms of regulatory oversight to a greater extent.

Another promising research avenue is to better integrate economics and psychological perspectives. King (2002) provides a recent example of this integration, demonstrating that a non-economic factor, group affiliation, can provide a disincentive that offsets auditors’ tendency to trust their clients. Using students to proxy for managers and auditors, King manipulates whether managers can make “cheap talk” promises to auditors, and whether auditors are affiliated with a group where they reveal if they were penalized for incorrectly trusting managers. King’s results reveal that “cheap talk” makes auditors less skeptical, but auditing-group-affiliation makes auditors more skeptical, such that auditors in the “cheap talk, group identification” condition appear roughly as skeptical as do auditors in the “no cheap talk, no
group identification” condition. We believe that this area of research offers many opportunities for future work, most of which involve examination of the incentives arising from interaction between various participants in the financial reporting process.

**Interactions between Auditors and Others**

Several *AJPT* papers have examined interactions between auditors and other parties, typically with regards to other parties’ views of auditor independence. For example, Pany and Reckers (1984), Pany and Reckers (1987) and Lowe et al. (1999) provide evidence that bank loan officers, analysts, and stockbrokers believe that audit independence is compromised by auditors providing non-audit services, particularly when data is elicited using a within-subjects design.

Much recent research has focused on perceptions of jurors, judges, and others who are in a position to affect auditors’ legal liability. For example, Jennings et al. (1987) provide evidence of a lack of consensus in the materiality judgments of various judges and various user groups. Kinney and Nelson (1996), Kadous (2000), and Anderson et al. (1993) provide evidence that various parties are vulnerable to outcome effects and therefore appear hindsight-biased when evaluating auditor decisions, while Anderson et al. (1997) and Kadous (2001) examine alternative ways to mitigate hindsight bias. Lowe et al. (2002) provide evidence that jurors hold auditors more accountable when auditors over-ruled the recommendations of a highly reliable decision aid, but less responsible when auditors relied on a highly reliable decision aid that turned out to have made an incorrect recommendation. Krogstad et al. (2002) show evidence that lawyers (proxied by law students) are less willing to provide auditors with estimates of unfavorable contingency outcomes when there is a threat of losing attorney-client privileges, and at low likelihoods of unfavorable contingency outcomes.
Finally, a growing literature examines auditors’ role as expert witnesses. Ponemon (1995) provides evidence that auditors’ expert-witness positions are influenced by their client’s preferred position. Ricchiute (2004) provides evidence that hints about an attorney’s line of argument can affect accountants’ decisions about whether another auditor complied with GAAS, particularly if those hints are received before reviewing the evidence, and that the certainty that auditors express in making such decisions in turn influence the judgments of mock judges.

**Auditor Interactions – Conclusion**

We see great promise in research examining how auditors interact with each other, with clients, and with other participants in the financial reporting process. Auditors do not work in isolation, so it is crucial to understand how the people, tasks, and environment that auditors interact with influence auditors’ performance. For example, despite the growing importance of audit committees in corporate governance, we know little about how audit committees interact with auditors, or how they rely (or do not rely) on auditors’ work in their deliberations.

Interactions between the auditor and important stakeholders are likely to be strategic in nature – each party has a particular set of interests, seeks to influence each other, and correspondingly needs to form expectations about the other party’s reactions (Sunder 2002). These interactions also necessarily involve strategic thinking. There have been very few studies on such higher-order strategic thinking, with notable exceptions being a study related to auditor-client interactions by Zimbelman and Waller 1999, and between-auditor interactions by Tan and Jamal (2004). At this stage, we know little about how good auditors or related stakeholders are at engaging in strategic thinking, nor the relation between strategic thinking and interaction outcomes. This appears to be another area in which JDM researchers could collaborate.
productively with experimental economists. We encourage JDM researchers to pursue these lines of research.

CONCLUSION

In this review, we subdivided the extant auditing JDM literature into work relevant to the audit task, the auditor, and interactions among auditors and other participants in the financial reporting process. This subdivision allowed us to highlight the research areas in which AJPT has been most influential over the past 25 years, as well as to examine key papers published in other journals that complement those published in AJPT.

Our review has also suggested numerous areas for additional research. Relevant to audit tasks, we believe that the most exciting work will examine how auditing tasks are adapting to the current post-SOX reporting climate and changing regulatory landscape. With a constant stream of new standards emerging from the PCAOB, and changing requirements like internal control certification, much work is needed to illuminate current audit practice. We see these as general research opportunities, but also as specific opportunities relevant to risk assessment, audit planning, and reliance on analytical procedures. The research literature was only beginning to grapple with the shift towards more risk-based, strategic-systems approaches occurring in practice in the late 1990’s (e.g., see Bell et al. 1997) before the recent spate of auditing scandals and regulatory changes – much work remains to understand how audit tasks have shifted in response to these events.

Relevant to auditor attributes, we believe that much future work will continue to examine how auditors develop and apply knowledge with respect to not only technical issues but also client- and engagement-management issues. Understanding how stress and emotions affect auditor JDM is an important topic that we believe has been researched insufficiently. Another
important direction will be to better understand how audit firms can aid decisions to focus expertise where it is needed and enhance independence.

We are most excited about future research involving auditor interactions, for several reasons. First, compared to our task and auditor categories, the interaction category is the most under-researched in auditing. Work involving audit tasks and auditor attributes has a long tradition in the accounting literature, while interactions have only recently become a focus of research. As a consequence, more important but neglected topics provide opportunities for interaction research.

Second, there exist large and vibrant literatures relevant to interaction in social psychology, organizational behavior, sociology and economics, so there is much theory to draw upon and apply to interaction issues. Recent research examining auditor-client interactions provides an instructive example. Researchers have begun accessing the large negotiations literature to consider negotiation strategy and how that affects audit conservatism (e.g., see Gibbins et al. 2001; Ng and Tan 2003; Trotman et al. 2004). At the same time, researchers are drawing on experimental economics literature to better consider how the institutional environment affects auditor behavior (see, e.g., King 2002).

Third, we believe that interaction pressures and failures underlie many of the difficulties encountered by audit practice in recent years. Between-auditor interactions lie at the heart of quality control and staff development, and missed opportunities for between-auditor interactions are associated with independence failures. Auditor-client interactions are fundamental to preserving audit quality, as these interactions include negotiations over changes in the financial statements necessary for the auditor to provide an unqualified opinion. Auditor interactions with
other financial-reporting participants are also very important, involving audit committee interaction, auditor reputation formation and litigation.

Finally, issues related to task, auditor attributes, and interpersonal interactions do not occur in isolation. Effects of interpersonal interactions likely depend on personal attributes of the auditor who interacts with others, and on what tasks. In the same vein, auditors’ performance depends on the nature of work performed by the auditor, and also on others interacting with the auditor both within and outside the audit team. Thus, while we separate these three areas for purposes of our review, we recognize that there interdependencies are important and offer their own opportunities for future work. We believe there is little doubt that future research examining task, auditor attributes, and auditor interactions will be well motivated and have the potential to make important contributions to auditing practice.
REFERENCES


_____. 1981. The auditors’ consideration when a question arises about an entity’s continued existence. Statement of Auditing Standards (SAS) No. 34. New York: AICPA.


