THE INFLUENCE OF CLIENT INTEGRITY AND COMPETENCE AND AUDITOR CHARACTERISTICS ON MATERIALITY ESTIMATES

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ABSTRACT

This research investigates the influence of client integrity and competence as well as firm and individual auditor differences on materiality estimates. In a laboratory setting, a case study was administered to 494 auditors (152 managers and 342 seniors) from five Big Six firms. The subjects were randomly assigned to one of three client types: high integrity and competence, low integrity and competence, and a control group (no explicit evaluation of client integrity and competence). The results indicate that materiality estimates were influenced by: (1) client integrity and competence, (2) moral judgement, (3) auditor experience, and (4) the individual accounting firms.

INTRODUCTION

Expectation gap research indicates that financial statement users commonly expect that all auditing firms should evaluate materiality at the same level for a given client (Firth, 1979). However, Elliott (1981) documented differences in materiality estimates between accounting firms. Elliott notes that studies have documented this variability in audit scope for similar circumstances; this variation could be caused by differences in risk assessment and materiality. Significant differences in bids for audit clients could indicate one of the following:

- Provide evidence of the variance in audit precision (Elliott, 1981)
- Using audit work to gain a position for consulting work
- Desire to build or expand the firm's reputation.

Materiality defines the size of 'errors or irregularities whose effect, individually or in aggregate, is important enough to cause them not to be presented fairly' (Statement on Auditing Standards No. 47). Then, as materiality increases for a given client, the level of audit work required to ensure the statements are 'stated fairly' should decrease.

One explanation for the gap in expectations might be based on the accountant's use of various quantitative rules-of-thumb for determining acceptable levels of materiality. For example, Pany and Wheeler (1989) cite ten quantitative rules-of-thumb traditionally used to determine the size of a material error. These calculations include factors such as the size of a company's net income or total assets. However, SAS No. 47, Section 312.06 (*Audit Risk and Materiality*) states that materiality is affected by both quantitative and qualitative factors. Estes and Reams (1988, p. 291) hold that materiality is influenced by qualitative factors and 'personal characteristics of the auditor, current economic conditions, history of the engagement, and experiences on the current audit'. Krogstad, Ettenson and Shanteau (1984, p. 68) found that 66% of the auditors made use of some 'contextual cues'. Newton (1977), Boatsman and Robertson (1974), Hofstedt and Hughes (1977) and Mayper (1982) also found individual differences in materiality judgements.

The purpose of this study is to empirically examine the influence of four non-quantitative factors on auditors' materiality estimates: (1) perceived client integrity and competence, (2) the level of an auditor's moral judgement, (3) firm, and (4) experience differences.

Client integrity and competence was selected because there is implicit evidence in accounting standards (SFAC No. 2, *Qualitative Characteristics of Accounting Information),* auditing standards (SAS No. 47, Section 312.07), and prior research that client integrity influences materiality. Ponemon and Gabhart (1988) found that an auditor's level of moral judgement, when combined with information concerning client integrity, was associated with materiality judgements.

This research corroborates and extends the work of Ponemon and Gabhart. Given this, then the level of an auditor's moral judgement should also be a significant variable in a descriptive model for estimating materiality. In addition, Janell and Wright (1992) found differences in

the risk assessment process between the firms; auditors from some firms are exposed to client integrity and competence data at an earlier stage in both the audit and in their individual careers. Seniors and managers from firms that assign risk assessment at lower staff levels (for example, audit seniors) should then be more sensitive to client integrity and competence data (biasing) than firms where risk is assessed at higher employment levels.

The remainder of this research is divided into four sections. The first section provides documentation for client integrity and competence as a qualitative factor and expands the theoretical basis for the research hypotheses. The second section provides the research methodology, and the third section analyses the data. The final section discusses the conclusions, limitations and suggested areas for future research.

HYPOTHESIS DEVELOPMENT

Client Integrity and Competence

Many auditors hold that materiality and risk are two separate concepts. This belief is grounded in the definitions provided in the Statements on Auditing Standards. Materiality answers the question: 'How large does an error have to be before the financial statements are misleading' (SAS No. 47, Section 312.04). Audit risk answers the question: 'How sure does the auditor have to be that there is not a material error in the financial statements' (SAS No. 47, Section 312.02). The measures of audit risk are based on an evaluation of inherent risk and internal control and are expressed as either a quantitative probability or as a qualitative estimate of 'high' or 'low' in practice.

Most research on the determination of materiality (Krogstad, Ettenson and Shanteau, 1984; and Pany and Wheeler, 1989) focuses on the analytic relationship (quantitative factors) between materiality and financial accounting information. SAS No. 53, Section 316.10, notes that the level of risk is affected by management motivations and their integrity and competence. Further, guidance provided in the 'Report on Internal Controls' by the Commission on Sponsoring Organisations (1992) states that the fundamental component of an internal control system is the competence, integrity, and ethical values of client management. Based on this evidence, it would appear that client integrity and competence should only affect control risk and not materiality. However, other evidence might lead to the opposite conclusion.

Statement of Accounting Concept No. 2 notes that materiality should be influenced by quantitative as well as qualitative factors. One qualitative factor an auditor is exposed to early in the auditing process is the evaluation of client integrity and competence. Furthermore, it can be argued that an audit is a sequential process, and that the perception of client integrity and competence precedes an auditor's materiality estimate (SAS No. 53, Section 316.34, *Materiality*). Thus it would appear that the evaluation of client integrity and competence could and should influence materiality judgements.

Statement of Financial Accounting Concepts No. 2 (*Qualitative Characteristics of Accounting Information*) states that 'Materiality should be a product of both quantitative factors and qualitative factors'. This concept also states that materiality must be considered with respect to the other qualitative characteristics of relevance and reliability (para. 124). The definition for reliability (para. 78) specifically cites the possibility of data being misstated by individuals with low integrity. SFAC No. 2, Appendix C (*Quantitative Materiality Characteristics*), gives seven examples of 'quantitative' considerations, which call for qualitative evaluations. All seven of these examples relate to wilfully withholding critical financial information — not the actions of a high integrity person. Additionally, there are numerous examples of these factors used in the standards.

The standards recognise that materiality is a matter of professional judgement which should be influenced by the needs of a reasonable person (SAS No. 47, Section 312.06). Section 312.07 provides support by noting that the 'interaction of qualitative and quantitative considerations' may cause relatively small amounts to be considered material. In this section, the standards use an illegal payment (an issue of client integrity) as an example. The standards also state that discovering an irregularity in an audit requires the evaluation of: (1) the integrity of management and (2) the implications of this evaluation on other audit areas (SAS No. 53, Section 316.34, *Materiality*). The inference is that client integrity not only influences risk, but should also affect materiality.

One can also build an argument for the inclusion of client integrity and competence on an empirical basis. Dyer (1975) found that materiality levels were lower than previous studies indicated and attributed this to different accounting standards and the increasing threat of legal action. Ward (1976) found that materiality was related to the auditor's perception of the negative consequences of an undetected misstatement.

In today's litigious environment, an auditor should increase the confidence level if client integrity and competence is low by expanding the audit's scope. However, in a highly competitive environment, an increase in scope may not be possible because of financial pressures. Mautz and Sharaf (1961, p. 131) state that time pressures and holding chargeable costs down affect the probability of detecting an error.

Anderson and Marchant (1989) note that the entire audit is affected by the judgements an auditor makes about the client and the competence and integrity of client personnel. Their research shows that judgements concerning a client's integrity are affected by negative evaluations. Newton (1977, p. 105) found that CPAs varied materiality between strict, normal and low thresholds to deal with risk (which in part is a function of client integrity and competence). Both Newton and Boatsman and Robertson (1974) conclude that risk should be considered when establishing materiality guidelines.

Taylor and Glezen (1991, p. 170) cite 'management's attitude about the integrity of the financial statements' as one of the qualitative factors that should affect materiality. Estes and Reames (1988, p. 291) also provide anecdotal evidence relating to the reduction of materiality for a low client integrity:

> 'When one of the authors was with a Big Eight firm, one audit client was infamous throughout the staff for trying to hide unpaid invoices and thus understate current payables, to improve the current ratio and thereby satisfy the bank that held the company's notes. Our (firm's) materiality threshold was generally lower on this engagement than on others.'

In a sequential, information-gathering process, Estes and Reams hold that an auditor would lower the materiality threshold if a series of omissions, errors or misstatements were observed. This leads to the following three hypotheses concerning client integrity and competence (all hypotheses are stated in their alternate form):

H1: Auditors provided with information indicating low client integrity and competence will estimate materiality lower than auditors provided with high-integrity-and-competence information.

H2: Auditors provided with information indicating low client integrity and competence will estimate materiality lower than auditors who are not provided with information concerning client integrity and competence (control group).

However, Anderson and Marchant (1989, p. 10) note that negative behaviour (low client integrity) affects audit strategy more than does positive (high client integrity) behaviour. This study added a control group to test for the proper encoding of the integrity and competence information. Mautz and Sharaf (1961, pp. 28-29) note that auditor actions and procedures should be based on an evaluation of the specific client:

> 'The auditor takes a tentative position on ... any number of other symptoms (that) may suggest that some propositions in the financial statements are not acceptable ... If he feels they are questionable, he is likely to apply more rigorous procedures ... If he feels they are satisfactory, he may fall back on a "minimum program".'

Mautz and Sharaf's only distinction is for the problem client, implying that most clients would fit into a satisfactory group with very similar audit programs. Therefore, one would anticipate that the control group's materiality estimates would not be different from the estimates for the high-integrity-and-competence client.

H3: Auditors provided with information indicating high client integrity and competence and auditors in the control group (that is, no information concerning client integrity and competence) will have similar materiality estimates.

Moral Judgement

In addition to the quantitative factors (for example, Pany and Wheeler's ten rules-of-thumb), various individual auditor characteristics have been shown to affect auditor judgements. Estes and Reams (1988), Mayper (1982), Hofstedt and Hughes (1977) Newton (1977), and Boatsman and Robertson (1974) found individual differences in materiality judgements. Behavioural research in auditing provides evidence of the relationship between moral judgement and selected auditor actions (Bernardi, 1991; Tully and Ponemon, 1992; Ponemon and Gabhart, 1988; and Arnold and Ponemon, 1991).

Moral judgement relates to a theory used '... to explain the human decision-making process prior to ethical behaviour. The theory is concerned with the process that individuals follow in making decisions and not with the moral philosophy of what is right or wrong' (Arnold and Ponemon, 1991). Two studies (Brabeck, 1984; and Bebeau, Rest and Yamoor, 1985), outside the area of accounting, indicate that high moral development individuals are more sensitive to information concerning the moral implications of an event.

Brabeck (1984) demonstrated that individuals at higher stage levels are more sensitive to integrity issues. She notes that high-moral-judgement-students 'whistle-blew' on a professor even when given conflicting instructions. In a simulated office experiment, Bebeau, Rest and Yamoor (1985) found that high-moral-judgement dental professionals saw the ethical implications of patient's previous treatment that went undetected by low-moral-judgement professionals.

Ponemon and Gabhart (1988) used positive and negative information about client integrity to determine their influence on materiality judgements. They note that estimates of the probability of misstatement increased (decreased) when the auditors were provided with negative (positive) data on client integrity. The estimates of misstatement were negatively (positively) related to DIT for positive (negative) contextual factors. However, unlike Ponemon and Gabhart whose cues were consistent for all subjects, the current research initially biases subjects by using one of three different client descriptions (either high integrity and competence, low integrity and competence or no information on client integrity and competence).

For the high-integrity-and-competence client, one would anticipate that materiality estimates would be less affected by the auditor's score on the Defining Issues Test. However, in addition to the information on client integrity and competence, other client and industry data was available to the subjects (similar to the factors provided by SAS No. 53). Then, given the research of Brabeck (1984), Bebeau, Rest and Yamoor (1985), and Ponemon and Gabhart (1988), this additional data should cause high-moral-development auditors to lower their materiality estimates even for the high-integrity-and-competence client.

Additionally, the staff level for reviewing client integrity and competence and risk assessment varies by firm between managers and seniors (Janell and Wright, 1992). Since the effect of moral judgement (DIT) is one of being sensitive to environmental cues, seniors at firms where these tasks are done by managers are not exposed to the effects of these environmental cues as early in their careers. However, by the time an auditor is a manager, they should have been exposed to these types of client evaluations. Given this, one would expect that the effect of moral judgement (sensitivity to environmental cues) should be fully developed by the manager level. Therefore, the testing of the effect of moral judgement on materiality estimates was limited to managers.

H4: High-moral-judgement managers will estimate materiality lower than low-moral-judgement managers.

Firm and Experience Differences

Research has shown that firm and staff level effects also play a significant role in explaining differences in auditor actions. Ashton (1982) notes that both experience and firm may be important variables in audit decision research. Janell and Wright (1992) studied the structure imposed by firms on the risk assessment process. They found significant differences in level of staff tasking and documentation in the risk assessment process for Big Eight firms. These differences could lead to different outcomes in risk evaluation as well as the estimation of materiality.

Bonner (1990) found differences in performance between experienced and less experienced auditors in a risk assessment task. Wright and Ashton (1989) found upper staff levels detected errors that went undetected at lower levels. Abdolmohammadi and Wright (1987) note that the pooling of experience levels resulted in the loss of considerable information concerning experience. Krogstad, Ettenson and Shanteau (1984, p. 69) speculate that partners' judgements 'reflect vested interest in business risk'. Newton (1977, p. 105) found that 55.3% of audit partners are risk-adverse.

This awareness of personal risk (liability) should develop as an auditor is promoted from junior through partner. It should not occur at the precise moment an individual is promoted to partner. Thus one might expect that managers' judgements would be more conservative than those of seniors.

H5: Managers' estimates of materiality will be lower than seniors' estimates.

Since accounting firms use different methods for computing materiality (for example, one of Pany and Wheeler's (1989) ten rules-of-thumb is the KMPG Peat Marwick method) and the estimation process is done at different employment levels within the various firms, this study also tests for differences between the five participating firms.

H6: There will be differences between firms in materiality estimates.

RESEARCH DESIGN

Sample

The sample examined in this study consisted of 494 auditors from 40 different offices of five Big Six firms.[1] The firms' offices were distributed over nine states. Subjects for this research were 152 managers and 342 seniors as shown in **Table 1**.

Table 1 - Sample by firm level and client type

	Participating Firms					
	F1	**F2**	**F3**	**F4**	**F5**	**Total**
Managers:						
Low	10	11	10	11	10	52
High	11	11	10	10	9	51
Control	10	10	10	10	9	49
Total	31	32	30	31	28	152
Seniors:						
Low	21	21	29	27	18	116
High	20	20	30	28	18	116
Control	21	21	29	22	17	110
Total	62	62	88	77	53	342
Overall:	93	94	118	108	81	494

Note: *High (low) indicates auditors who audited a high (low) integrity and competence client; control reflects no integrity and competence data.*

The average audit experience was 7.0 years for managers and 3.7 years for seniors.

Audit Simulation

The simulated audit exercise, which formed the basis of this research, was a modified version of a simulated audit developed by Pincus (1990). One of the modifications was to add the evaluation of client integrity and competence (not part of the original Pincus study) to the general background data in the case study's introduction (Appendix A).[2] The simulation exercise began by providing general background information on the client. The subjects were also provided with a list of 70 additional pieces of audit evidence (Pincus, 1990) — the same as would be found in the work papers of an audit.

The format for evaluating client integrity and competence was shown to representatives of all firms. These representatives said that the format's intention was clear and approximated what their firm used. One representative said the format almost replicated theirs. The authors were

also told that a common practice in auditing is to consider client integrity and competence as one variable. That is, if both integrity and competence are high the client receives a high rating. If either integrity or competence is low or if both are low, the client receives a low rating. While in theory it might be interesting to study client integrity and competence separately, it would not add to the body of knowledge since this is not what occurs in practice and would have unnecessarily increased sample size.

Laboratory Procedures

Subjects were randomly divided into three groups. The only actual difference in the case study materials given to each group was the evaluation (or lack of it for the control group) of client integrity and competence. This evaluation was provided in the initial General Background Handout (Appendix A).[3] For the two groups receiving explicit information on client integrity and competence data, this information was conveyed by using a hypothetical scale in which the audit firm's management had already evaluated the client in the case study. The subjects were told that all perspective clients were evaluated in terms of this scale and that the firm has a policy of not accepting clients with scores of greater than ten.

Subjects in the first group received cases which indicated a relatively high perceived level of integrity and competence for the client (that is, a ranking of '2' on the scale). The subjects in the second group were provided with cases that indicated a relatively low level of client integrity and competence (say, a ranking of '8' on the scale). The third (control) group received cases in which there was no reference to client integrity and competence.

While one might argue that, in all three cases, the ratings given were acceptable and, therefore, should not affect auditor judgements, it must be realised that this study was concerned with the effect of the independent variable within the confines of audit situations deemed acceptable to the firms (that is, the range of clients that are currently being audited).

It seemed to be a moot point to examine whether an auditor would make different audit judgements if they were forced to audit a firm which they currently chose not to accept. While the subjects in two groups were initially provided with client integrity and competence evaluations, all subjects were free to revise (high and low groups) or develop (control group) their estimate of client integrity and competence

after reviewing any of the additional 70 pieces of audit evidence during the exercise.

Because of time limits, no direct manipulation of the client integrity and competence conditions were made to determine if this data was correctly encoded. An indirect test of the client integrity and competence manipulation was the individual subject's assessment of the possibility of fraud existing given on the Background Questionnaire. This questionnaire was filled out after the subject handed in the case study materials. Auditors who said 'NO' (that is, accounts not fairly stated) and who audited a low integrity client rated the probability of fraud significantly higher than other auditors. Auditors who said 'YES' (that is, accounts fairly stated) and who audited a high integrity client rated the probability of fraud significantly lower.

Anticipated Estimates

The research hypotheses dealt with the auditors' estimation of the size of a material error in the inventory account. All participants were asked (See Appendix B): How large must an error in the inventory account be before it is considered material (smallest size to be material)?

Applying Pany and Wheeler's rules-of-thumb to the data provided in the case study, one could generate ten different materiality estimates. These estimates have a range of $122,000 to $318,000 (hereafter referred to as the anticipated range). This anticipated range has a mean $211,000 (anticipated mean) and a standard deviation of $65,000.[4]

If the subjects choose to estimate materiality on a financial statement basis as implied by Pany and Wheeler's ten rules-of-thumb, one would expect their estimates to fall within the anticipated range. If they allocated materiality to a specific account (for example, to inventory), their estimates should be below the anticipated range.

Moral Judgement Testing

The subjects' level of moral judgement was tested using the short form version of the Defining Issues Test (Rest, 1979). This test consists of three questions that ask subjects to make action-type decisions about social dilemmas. Each question (dilemma) presents 12 considerations that reflect reasoning at the six stage levels of moral development (Kohlberg, 1969).

The test asks each individual to rank the four most important considerations for each dilemma. The Defining Issues Test (DIT)

measures the percentage of stage five and six considerations (highest principled stages) used in the subject's decision process. Test scores range between zero and 90. A score of zero indicates that all answers were considerations at the lower four stage levels; a score of 90 indicates all responses were stage five and six considerations. There is a 3.33 point increment between scores on the three story version of the DIT (the highest three scores would be: 83.33, 86.67, 90.0).

ANALYSIS

Table 2 provides firm-specific information on the staff level responsible for estimating materiality and risk assessment and whether or not the firm applies materiality on a financial statement basis or allocates materiality to specific accounts. To ensure confidentiality of data, each firm was randomly assigned a firm number.

Table 2: Materiality data for participating firms

Firm	Level Responsible for Materiality and Risk Assessment	Materiality Applied
F1	Senior*	Both financial statement basis and allocation
F2	Senior*	Financial statement basis
F3	Manager**	Financial statement basis
F4	Senior*	Financial statement basis
F5	Manager**	Financial statement basis

* *Signed-off by account manager and partner*
** *Signed-off by account partner*

Table 2 confirms Janell and Wright's data for both materiality and risk assessment. One would expect the seniors from Firms Three and Five to have higher estimates of materiality than the seniors from the other three firms since they are unfamiliar with the task.

The mean of the actual test data (hereafter referred to as the actual mean) of $207,100 centres on the 200 range ($200,001 to $250,000) which includes the anticipated mean of $211,000. Twenty-eight of the 152 managers (18%) and 112 of the 342 seniors (33%) were outside the anticipated range. The data indicates that 87% of the sample estimated materiality at or above the lower end of the anticipated range (Pany and Wheeler, 1989). For the other 13%, there was no evidence to support an argument that auditors from a specific firm allocated materiality on an account basis.

A Kolmogorov-Smirnov test for normality indicated the data was not normally distributed; therefore, the six research hypotheses were tested using nonparametric tests. The first three hypotheses were tested using the Dunn multiple comparison test (Hollander and Wolfe, 1973, pp. 115-132).[5] Hypothesis four was tested using the Theil tests for determining the significance and magnitude of the slope (Hollander and Wolfe, pp. 200-206). Hypothesis five was tested two ways: (1) comparing all managers to all seniors using the Mann-Whitney test (Hollander and Wolfe, pp. 71-72) and (2) comparing managers by firm to seniors by firm using the Wilcoxon-Signed Rank test (Hollander and Wolfe, pp. 27-33). The Dunn multiple comparison test was also used to evaluate hypothesis six.

Client Integrity and Competence

Dunn multiple comparison tests were used to evaluate the differences between the low vs high (H1), low vs control (H2), and control vs high contrasts (H3). Hypothesis one, the low vs high contrast, cannot be supported. While the low-integrity-and-competence group's estimates were lower than the high-integrity-and-competence group's estimates, the difference was not significant ($p = .31$). However, hypothesis two is supported by the data; the control group's (no client integrity and competence information) estimates were significantly higher than the estimates of the low-integrity-and-competence group ($p = .022$).

Hypothesis three was supported by the data. While the control group's estimates of materiality were actually higher than the high-integrity-and-competence group's estimates, the difference was not significant ($p = .84$). This suggests that, in the absence of explicit information concerning client integrity and competence, auditors' materiality estimates are at least equal to those for a high integrity and competence client (auditors' estimates are positively biased). A possible explanation for this is that the vast majority of clients exhibit acceptable integrity and competence.

Moral Judgement

The effect of auditor moral judgement on materiality estimates was evaluated using the average rank for each of the 25 scores actually attained (3.3 to 83.3) on the Defining Issues Test (DIT) for both seniors and managers. The Theil test for slope coefficients tests the probability that the slope (that is, a change in materiality estimate associated with a change in moral judgement) was equal to zero. If the slope is not equal to zero, the slope's magnitude was determined using the Theil slope estimator.

Hypothesis four, that the slope was not equal to zero for managers, is supported ($p = .006$). A nonparametric estimate of negative 1.40 was computed for the slope. This indicates that for each additional 3.33 points (the interval between two sequential DIT scores), managers would estimate materiality $1,400 lower. Using the median DIT score for managers, this equates to an average reduction in an auditor's estimate of materiality of $17,700 (i.e., 8.5% of the $207,100 mean).

Firm and Experience Differences

Table 3 presents the average materiality estimates and variances in these estimates by firm and staff level.

Table 3: Materiality estimates by firm and level

Staff Level	Participating Firms (High to Low) F5	F1	F3	F4	F2	Overall
Manager:						
Mean ($000)	231	207	213	186	152	196
St. dev ($000)	90	92	107	75	74	93
Senior:						
Mean ($000)	268	235	205	199	168	212
St. dev ($000)	113	126	104	92	121	115
Overall:						
Mean ($000)	255	225	207	195	162	207
St. dev ($000)	107	117	105	88	107	109

Note: Mean = Average estimate in materiality
St. dev = Standard deviation

Hypothesis five, which tested for differences in experience, is not supported by the data for all managers and seniors ($p = .105$). One explanation for this is that while managers' estimates were lower than seniors' estimates for four of the five firms, the range of average materiality estimates is common for both managers and seniors between $231,000 (Firm One managers) and $168,000 (Firm Two seniors).

We did note a significant staff level effect ($p = .04$) within the individual firms when applying the Wilcoxon-Signed Rank test to the difference between the mean estimates of materiality for managers and seniors by firm. Of equal interest was the observation that the variance of the seniors' estimates was notably higher than the managers' variance for four of the five firms. This would confirm the notion that increased experience (including more training and job feedback) has produced more agreement on estimates. This finding is consistent with those of Krogstad, Ettenson and Shanteau (1984).

Table 4 is derived from **Table 3**. The differences presented in **Table 4** are the differences between each firm's overall materiality estimates shown in **Table 3**. For example, the $93,000 difference between Firms Five and Two shown in **Table 4** was computed by subtracting Firm Two's overall estimate ($162,000) from Firm Five's overall estimate ($255,000).

Table 4: Firm differences in materiality

		Firms from Low to High Estimate			
		F2	**F4**	**F3**	**F1**
Firms from High to Low Estimate	F5 ($000)	93 (.01)	60 (.02)	48 (.05)	30 NS
	F1 ($000)	63 (.01)	30 NS	18 NS	
	F3 ($000)	45 (.05)	12 NS		
	F4 ($000)	33 NS			

Note: NS = Not Significant
(Significance)
Read from row (higher estimate) to column (lower estimate): auditors from Firm Five estimated materiality $93,000 higher than Firm Two auditors

Hypothesis six, which tested for differences between firms, is supported by the data ($p < .05$). As shown in the first column of **Table 4**, Firm Two was significantly lower than Firms Five, One, and Three. The first row of **Table 4** shows that Firm Five's average estimate was significantly higher than that of Firms Two, Four, and Three. One explanation for these differences might be the point in an auditor's career at which they are exposed to the firm's materiality estimation process; **Table 2** shows that in some firms the task is assigned to managers while in others it is done by seniors. Additionally, the average experience as a manager closely approximates the time spent as a senior; therefore, all managers should have approximately the same experience at estimating materiality (either as a senior or as a manager). Given this, a more accurate assessment of firm differences would be obtained by comparing managers' estimates.

Table 5 is also derived from **Table 3**; the differences presented in **Table 5** are the differences between the managers' materiality estimates for each firm shown in **Table 3**.

Table 5: Materiality differences for managers by firm

	Firms from Low to High Estimate			
	F2	**F4**	**F1**	**F3**
F5($000)	79	45	24	18
	(.02)	NS	NS	NS
F3($000)	61	27	6	
	(.12)	NS	NS	
F1($000)	55	21		
	NS	NS		
F4($000)	34			
	NS			

Note: NS = Not Significant (Significance)

Read from row (higher estimate) to column (lower estimate): managers from Firm Five estimated materiality $79,000 higher than Firm Two managers

From **Table 5**, it can be seen that there was only one significant firm difference for managers. This demonstrates that the firm differences in **Table 5** were primarily driven by the differences for seniors. These results show the importance of considering experience when examining firm differences.

Discussion

One might argue that finding a significant difference between the control and low group's estimates makes the differences found in hypotheses three to five meaningless. This is because any observed differences in the materiality variable found in these hypotheses might be attributable to the earlier difference found between the control and low-integrity-and-competence groups. The logic of this argument can be dismissed by referring to **Table 1** and the basis for nonparametric statistics.

While there were size differences among the samples from the firms (most notably for seniors from Firms Three and Four), the relative size of the control group (that is, the size of this group compared to a firm's total sample of seniors) varied only slightly. The control and low groups were the same size for seniors from three of the five firms (Firms One, Two and Three) and within one subject for Firm Five. Firm Four had the largest difference between these two groups — five seniors.

Since subjects were assigned to groups on a random basis and the Dunn multiple comparison test uses the average rank for comparison, small differences in sample size should not have a significant effect on the outcome of the analysis. Given the averaging of ranks, the higher estimates of the control group and lower estimates by the low-integrity-and-competence group should affect all firms about equally. Finally, significant differences were only noted for managers. If one reviews **Table 1**, one notes that the difference between the groups by firm varied only by two subjects for managers (11 against 9). Indeed, sample composition for the low and control groups was equal for two of the five firms and within one subject for the other three firms (**Table 1**).

CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

Conclusions

This research demonstrates that client integrity and competence plays a

significant role in risk assessment, and that it is also used when estimating materiality. The current research supports the findings of Krogstad, Ettenson and Shanteau (1984) that non-financial, contextual information affects materiality. The research indicates that materiality estimates, for clients whose integrity and competence was rated as being low (low group), were significantly lower than the estimates provided by the control group. The research also indicates that when auditors were not provided with integrity-and-competence information (control group), their estimates were not significantly different than estimates for the high-integrity-and-competence group.

The research suggests that auditor moral judgement was significant for managers. If one considers the 'Red Flags' provided in SFAC No. 2 and SAS No. 53 in light of the case study data, it becomes evident that high-moral-judgement managers are lowering their materiality in response to data which the statements imply should make them more suspicious. This is what one would expect a prudent person to do when confronted with a similar situation. The net effect of this reduction in materiality should be an increase in the level of audit precision.

While several studies have shown that increasing moral judgement in the short run is questionable, firms might wish to adopt a short-term policy of having high-moral-judgement auditors review materiality estimates. For the long term, efforts should be made to increase the moral judgement of all auditors. The results also indicate that future research design should control for cognitive style.

Using a large sample of experienced auditors, this research documents the limited research data of other studies concerning firm differences in estimating materiality. The research found that differences between managers' and seniors' estimates were significant when these experience levels were compared by firm. Firm-to-firm differences in materiality estimates for managers varied from $6,000 to $79,000 (**Table 5**). This research also confirms Ashton's (1982) findings that both firm and experience should be considered as important variables when studying audit decisions.

Limitations

A limitation of this research, as well as most laboratory experiments, was that there was no way of measuring how seriously the participants took the entire exercise. The case study involved inventory control in a specific environment; other accounts or environments might result in different outcomes (since inventory is more subject to manipulation).

Future Research

A potential area for future research that would address the limitations of this study involves the case study itself. Several new case studies should be developed. These additional case studies could serve to validate the findings of this research and should be designed to test other areas of audit tasking to determine whether the results of this research are applicable to other environments. Finally, while this study used a series of nine $50,000 ranges for the auditor to select from, another option is to use an open-ended response.

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NOTES

[1] Managers and seniors were selected because Janell and Wright (1992) indicate differences between firms and employment levels in the audit planning process.

[2] Other changes to the original case study included updating all financial data for inflation and providing data on inflation as part of the general client background handout. The case study dates were made date neutral (for example, 1974 became 19A1, 1975 became 19A2, etc.).

[3] Prior to administering the simulation to the subjects, the format for the evaluation of client integrity and competence (Appendix A) was shown to representatives from all participating firms. These individuals said that the format's intention was clear. One of the representatives stated that the format replicated the one their firm currently used.

[4] For tabulation purposes, the auditors' materiality estimates were coded using the lowest value in each range of materiality (that is, $50,001 – $100,000 was coded as '50'). This method of recording the data extends the anticipated range to $100,001 (lower end of the $100,001 to $150,000 bracket) to $350,000 (upper end of the $300,001 to $350,000 bracket).

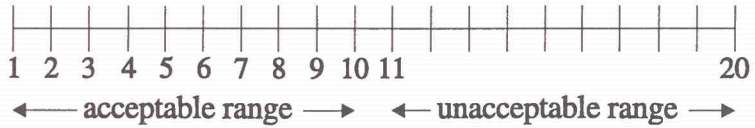
This is approximately two standard deviations either side of the *anticipated mean of $211,000.*

[5] *The reason for choosing the Dunn test over other multiple comparison tests was that the Dunn test is valid for unequal sample sizes.*

APPENDIX A
CLIENT INTEGRITY AND COMPETENCE INFORMATION

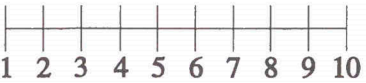
Evaluation of Management
Your firm has a policy of evaluating potential clients in several critical areas prior to accepting a new client. Two of these areas are:
(1) Management integrity, and
(2) Management competence.

Your firm believes that the entire population of potential clients for all accounting firms can be described on a scale from 1 to 20. Your firm's standard for an acceptable client is a rating from 1 to 10 on both dimensions.

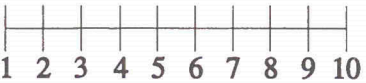


Entire Population
In your firm, this evaluation is an on-going process for all clients. Clients who do not maintain a rating within the acceptable range are carefully evaluated for continuation as clients. El Tiovivo's ratings have been stable since becoming a client and currently reflect the following evaluations (circled values).

Management Integrity:



Management Competence:



APPENDIX B
MATERIAL ERROR INFORMATION AND QUESTION

Recalling the following data from the El Tiovivo Case:

Total Assets	$35,770,004	Total Revenue	$57,275,966
Total Equity	$12,233,341	Gross Profit	$23,483,146
Pre-tax Income	$ 4,238,422	Total Inventory	$6,572,135

Both Client Integrity and Competence were rated: _____*

How large must an error in the inventory account be before it is considered material (smallest size to be material) CIRCLE ONE

Less than 50,000	50,001 - 100,000	100,001 - 150,000
150,001 - 200,000	200,001 - 250,000	250,001 - 300,000
300,001 - 350,000	350,001 - 400,000	More than 400,000

* This line was omitted for the control group.

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