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The impact of management's tone on the perception of management's credibility in forecasting

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The Impact of Management's Tone on the Perception of Management's

Credibility in Forecasting

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
School of Accountancy
College of Business Administration
University of South Florida

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Dedication

I would like to dedicate this dissertation to my wife Beth who persevered with me through this entire process. Beth's never ending understanding, support, and belief that I could finish were inspirational. I would also like to dedicate this work to Dr. Jim Hunton encouraging me to join the PhD program. This work is also dedicated to Dr. Jackie Reck and Dr. Uday Murthy both of whom took the reins from Dr. Jim Hunton and inspired me to keep going.

This work is also dedicated to the many PhD students from the University of South Florida who inspired me while making this journey. To Dr. Tonya Benford and Dr. David Hayes for setting the seeds for what may be the most collegial group of graduate students ever. Thank you to Dr. Cindy LeRouge for helping me to cope with the first semester. I would also like to dedicate this work to Anita Reed and thank her for becoming a best friend along the way. This work is dedicated to the late Rosalyn Mansour. Rosalyn was only with us for a short time on this journey but she was an inspiration to everyone. I also hope this dissertation inspires the current students at USF: Ann Dzuranin, John Chan, Norma Montague, and Chris Jones to race to the end of their path as fast as possible but to enjoy ever minute of the journey.

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The Impact of Management's Tone on the Perception of Management's Credibility in Forecasting

Robert D. Slater Jr.

ABSTRACT

The purpose of this study is to examine the impact of management altering its tone in communications on participants' perceptions of management credibility. Management's tone in communicating with participants was manipulated using communications from management under two treatment conditions. In period one of the study management's tone was manipulated within the management statement on internal controls as required by the Public Company Accounting Oversight Board's (PCAOB) Auditing Standards No. 2. In period one, participants had no knowledge of management's prior forecasting accuracy. Consistent with predicted hypotheses, the findings reveal that management can increase its credibility with participants by communicating its empathy, responsiveness, and understanding. Management's increased credibility was measured using both a validated credibility scale and by examining participants' reliance on management's forecasts. In period two of the study all participants had knowledge of management's forecast failure in period one. The results from period two found that tone could impact the rating of

management's credibility when management had previously failed to meet a

forecast but that tone had no impact on participant's changes in their earnings

per share estimates after management had previously failed to meet a forecast.

1.0 Introduction

The stock market has placed a great deal of importance on companies meeting earnings estimates, with stock prices often dropping for companies that fail to meet estimates. In addition to a drop in share price, management can lose credibility for failing to meet projected forecasts (Williams 1996; Mercer 2005). Credibility plays an important role in management's ability to signal the market about its expected earnings and the market's beliefs about management's earnings signal (Williams 1996; Hirst et al. 1999; Mercer 2001). The market will align with management's beliefs when it receives signals from management that it perceives as more credible (Verrecchia 1983; Verrecchia 1990). Therefore, it is important to study ways in which management credibility can be enhanced, allowing management to communicate with the market in a more efficient manner.

Developing an understanding of the factors that affect management credibility will allow us to gain a better understanding of how management is able to communicate its beliefs about earnings to the market. However, there is some debate in the literature about the factors that make up credibility. The most recent studies have assumed that credibility is a two factor construct consisting of trustworthiness and expertise (Hirst 1994; Mercer 2004; Mercer 2005), while there is evidence from the persuasion literature that credibility is a three factor

construct that includes as the third factor perceived intentions of the communicator (McCroskey and Teven 1999).

The objective of this research is to test whether management's credibility is impacted by investors' perceptions of management's intentions toward them. Also, in an attempt to reconcile the theoretical model of source credibility from McCroskey and Teven (1999) with the findings from accounting studies (Jennings 1987; Williams 1996; Hirst et al. 1999; Mercer 2005), the impact of changes in management's credibility on participants' judgments will be examined. Specifically, this study examines participants' ratings of management credibility and their reliance on information provided by management.

To investigate participants' perceptions of management's credibility, this research manipulates management's tone in written communications and measures the ensuing impact on participants' perceptions of management's credibility. The research investigates whether changing the tone in written communications allows management to alter participants' perceptions of management's intentions; thereby, increasing perceived credibility and also the degree to which participants rely on management's forecast guidance (Hovland et al. 1953; McCroskey and Teven 1999). The research also investigates whether management's loss of credibility for failing to meet a projected forecast of earnings per share can be mitigated by the tone management uses to convey the news to shareholders in a written communication.

The study manipulates management's tone in two communications with participants under different circumstances. The first manipulation of

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management's tone will be delivered with the financial statements, in management's statement about the company's internal controls, as mandated by the Public Company Accounting Oversight Board's (PCAOB)(2004) Auditing Standard No. 2, "An Audit of Internal Control over Financial Reporting Performed in Conjunction with an Audit of Financial Statements." This is a new standard that calls for management to report to investors on the internal controls of its company. While the report on internal controls is a mandatory communication management must make to investors, the wording of the report has not been specified by the PCAOB. This report was selected for study because it presents an opportunity to examine the possible effect different wording of a newly mandated report may have on investors' judgments.

Management's tone is also manipulated after participants receive actual financial results for which management has inaccurately forecasted. As stated previously, management's credibility should be reduced when it fails to meet a forecast (Jennings 1987; Hirst 1994; Williams 1996; Mercer 2005). The tone in management's letter informing participants about the actual results of the quarter will be manipulated and the effects will be measured on both the perception of management's credibility (measured by a credibility rating) and on the reliance on information supplied by management (measured by participants' reliance on management's forecasts).

The results of this research should inform policymakers, such as the PCAOB, as to the effect different wording can have in communicating with investors. As indicated, Auditing Standard No. 2 (PCAOB, 2004, §163), leaves

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the exact wording of the management statement on internal control up to management, stating that the report can "take many forms" as long as management states a direct conclusion about the effectiveness of internal controls. If it is found that subtle wording differences in required reports can impact investors' perceptions, then the PCAOB may want to consider restricting the wording that could be used in such reports.

The remainder of this study proceeds as follows. Chapter 2 reviews the theoretical background of the study and develops the proposed hypotheses. Prior studies investigating management credibility in forecasting will be examined in reference to a model of credibility from persuasion studies (O'Keefe 1990; McCroskey and Teven 1999; Perloff 2003). Formal hypotheses will be developed based on the theoretical model proposed. Chapter 3 explains the research method used to test the hypotheses proposed in Chapter 2. Also in Chapter 3, each of the variables in the study is defined. A formal research model is presented as well as the proposed statistical analyses of each of the hypotheses. The results of three pilot studies are also discussed. In Chapter 4, H1 through H4 are statistically tested and results are presented to support the findings from the study. After analyzing the predicted results a post hoc analysis is conducted to examine the credibility construct further. Chapter 5 summarizes the findings of the study and presents the conclusions drawn from the analysis of the study. Limitations of the study are also presented in Chapter 5, as well as the overall contributions of the study.

2.0. Theoretical Background and Hypotheses Development

This chapter begins with a discussion of the impact of credibility on management forecasts. A formal model of the two factors (surprise and credibility) that have been found to affect investors' belief revisions, with regard to management forecasts, is presented. Each of the factors (surprise and credibility) is discussed in general, and prior studies that have examined these factors are presented. One of the factors of this model – credibility – will be further analyzed within the context of source credibility theory (Hovland and Weiss 1951; O'Keefe 1990). A three factor model of credibility is discussed (McCroskey and Teven 1999), as are two measures of credibility – the impact of management's past forecast accuracy and its tone in communications with investors. Based on source credibility theory, four hypotheses are then proposed regarding the effects of altering the tone of communications with investors and how the tone can influence management's perceived credibility and the amount by which investors rely on management forecasts.

2.1 Credibility and Management Forecasting

Firms are required by the Securities and Exchange Commission to report certain financial information to investors. Additionally, many firms go beyond the mandated disclosures and make voluntary disclosures to investors. One example of a voluntary disclosure is a management earnings forecast.

Voluntary disclosures, such as earnings forecasts, allow managers to share knowledge that is not already available to investors, and thereby reduce the amount of information asymmetry (Ajinkya and Gift 1984). For management to determine whether to release voluntary information to investors, management needs to have an understanding of the true value of the information,[1] the costs of disclosing the information, and an understanding of investors' expectations. Management's optimal threshold level of disclosure is simultaneously dependent on these three variables (Verrecchia 1983; Kim and Verrecchia 1991). Some analytical models of disclosure hold that once management reaches the disclosure threshold it always discloses truthfully, since it may face lawsuits if disclosures do not match the actual results (Hughes 1986). Research findings looking at management forecast disclosures are mixed as to whether management is truthful (i.e., unbiased) in its disclosures. Some studies have looked at management's earnings forecasts and compared the forecasts to the actual results for the period and found that management's forecasts were positively biased (Penman 1980; Waymire 1984; Clarkson et al. 1992; Mcconomy 1998). While other studies, such as the one done by McNichols (1989), found no evidence that earnings forecasts were systematically biased, positively or negatively, but did find that investors did not take management forecasts at face value. McNichol's finding indicates that investors perceived management's forecasts as biased, or lacking some credibility.

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[1] The "true value of the information" is the understanding by management of the economic and competitive advantage of the information (Verrecchia 1983).

For the purposes of this study, whether or not management forecasts are actually biased is not as important as the finding that investors perceive management's forecasts as biased, and discount them. Finding that investors do not react as if management discloses honestly does not invalidate Verrecchia's findings that management's optimal threshold level is dependent on the type of information, disclosure costs, and current market expectations. Instead the threshold level of disclosure shifts to a value that can include additional disclosure costs to establish management's credibility with investors. The increase in disclosure costs shifts management's optimal level of disclosure to a point where greater information asymmetry must be present before management benefits from disclosure.

This study investigates the effectiveness of a low cost method of influencing management's perceived credibility. Management's goodwill or perceived intentions, a factor affecting credibility, could potentially be manipulated at relatively low cost. Increasing management's disclosure credibility with a low cost option such as modifying the tone of written communications with investors increases the quality of management's disclosure, thereby, lowering the threshold at which management chooses to reduce information asymmetry (Verrecchia 1990).

2.2 Credibility and Investor Belief Revision

2.2.1 Investors' Reliance on Earnings Forecasts

Several empirical models offer a basis for determining how users incorporate management forecasts into their own beliefs. These models all contain management credibility or a similar construct (Patell 1976; King et al. 1990; Williams 1996; Hirst et al. 1999; Mercer 2001). The goal of this study is not to redefine these models into one single unified model; instead the goal of this study is to examine management credibility, one of the main factors of these models. It is generally held that the amount by which a user's belief is revised is a combination of the credibility of management in making the disclosure and the surprise element of the information contained in the disclosure. Jennings (1987) proposes that the amount of belief revision is modeled as an interaction between management's credibility and the newness (surprise) of the information contained in the forecast. The Jennings model is consistent with findings in accounting research on forecasts (Williams 1996; Mercer 2001), and models of credibility from the psychology literature (Hovland and Weiss 1951; Hovland et al. 1953; Hovland and Pritzker 1957; O'Keefe 1990; McCroskey and Teven 1999; Perloff 2003).

The current study adapts the Jennings (1987) model, in that it models credibility and surprise as affecting investor belief revision. However, since the current study holds the degree of surprise constant for all participants, the interaction of surprise with credibility is not modeled. In the following section I

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briefly discuss the notion of "surprise" before going on to discuss belief revision and credibility, which are the constructs of interest in this study.

2.2.2   Information Surprise

The surprise of the information contained in the forecast is the difference between the investor's current level of belief based on the information set currently held and the new information in the forecast. Surprise is a measure of the degree of information asymmetry between management and investors. Surprise also represents the maximum belief revision management expects to generate with its disclosure, since the purpose of its disclosure is to bring investors' expectations in line with its own. Management's expectation that it can change beliefs is supported by studies in psychology that have found that a portion of a subject's opinion change is a function of the difference between the current beliefs a subject has and the beliefs advocated by a communicator (Ewing 1942; Hovland and Pritzker 1957). Greater opinion changes occur when the difference between the subject's beliefs and the communicator's advocated message is larger. Surprise has also been referred to as the degree of conformity.[2] The current study does not manipulate surprise between participants but instead seeks to hold it relatively constant across participants in order to examine the impact of credibility.

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[2] The degree of conformity can be an opinion in the same direction (pro-attitudinal) or in an opposite direction (counter-attitudinal). For example, both the receiver and the communicator can have the same pro-attitude toward a message but have a different level of belief.

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2.2.3   Belief Revision

Belief revision in this study is defined as the difference between the current level of beliefs held by participants before receiving new information from management and the participants' revised level of beliefs after receiving new information from management. Belief revision will equal the amount of surprise if the participants fully revise their beliefs to the new information provided by management. According to some analytical models of disclosure, the current level of investors' beliefs is one of the factors management must identify when deciding to make a disclosure (Verrecchia 1983; Kim and Verrecchia 1991). Disclosure costs increase as the difference between management's disclosure and the market's current level of belief increases. These costs can be actual costs paid for assurance on disclosures, the cost of compiling the information, costs associated with the loss of proprietary information, and indirect costs such as those related to credibility.

Measuring the market's current level of belief is difficult to do. Prior accounting studies looking at management disclosures have used proxies for the market's current level of belief. One such proxy was the stock price of a security before management released its information (McNichols 1989). Other studies have used earnings per share estimates of analysts, and proxy the market's current level of belief as the composite analyst forecast (Kasnik and Lev 1995). Behavioral studies looking at disclosure have given participants base information, such as the analysts' composite forecast, to proxy for the market's level of belief (Libby and Tan 1999; Mercer 2005). Giving participants base information is a

weakness in prior studies because it forces participants to integrate the given base information with their true current level of belief. Since their true or initial level of belief is not known, this leads to an anchoring and adjustment (Tversky and Kahneman 1974) effect that is not captured in the study.

Hirst et al. (1999) tried to control for differences between participants' initial levels of beliefs by using the participants' initial predictions as a covariate in the data analysis. However, they also gave all of the participants (in each treatment) the same information regarding actual earnings. Therefore, to the extent that the difference between the initial prediction and actual earnings would vary across participants, the degree of surprise would have varied across participants potentially confounding the results. This study takes a unique approach to controlling for the interaction of the participants' current level of beliefs and management's disclosure. Instead of controlling for the current level of beliefs by giving participants a starting point, participants will be able to select their initial earnings per share estimate, and the actual earnings number released by management will be revealed as a set percentage increase over each participant's initial prediction, thereby holding the degree of surprise relatively constant across participants. The approach taken in this study removes the possibility of an unmeasured anchoring effect that may have taken place in prior studies.

2.2.4   Credibility

The factor affecting belief revision that is of interest in this study is the communicator's credibility. Credibility is a measure of the perceived believability

of a communicator, where the perception of credibility is made by a message recipient (perceiver) (O'Keefe 1990). Credibility is not a trait that can be directly observed. The amount of perceived credibility held by any one communicator may vary from one message recipient to another (O'Keefe 1990). Some message recipients will find one communicator highly credible while other recipients do not (O'Keefe 1990). This is easily seen in the realm of politics where one candidate can be seen as quite credible by his/her followers but not very credible by those who support his/her opponent.

Only one prior accounting study has looked at management's credibility using a psychological model similar to the one used in this study. Management credibility is modeled by Mercer (2005) as the trustworthiness and expertise of management, which is consistent with prior models of credibility from the persuasion literature (O'Keefe 1990; Perloff 2003). Mercer (2005) looked at management's failure to warn investors of a negative news surprise, and measured the failure's impact on investor's perception of management's credibility. The study found management's actions did impact credibility ratings; however, no assessment was made on how the change in credibility impacted investors' reliance on management's forecasts. Participants were asked if they would rely on future disclosures, and those who were in the higher credibility manipulation (i.e., the ones who were warned) did state they would rely on future disclosures. Therefore, while accounting research suggests that credibility is composed of more than one factor (see Figure 1), the link between credibility ratings and investor judgments remains untested. To establish the link between

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perceived credibility and investor judgments (specifically in a belief revision task) I use source credibility theory as applied in psychology and marketing.

Source credibility theory posits that in most circumstances, the more credible a communicator, the more likely the communication will elicit change of beliefs in message recipients (Hovland and Weiss 1951; Hovland et al. 1953; O'Keefe 1990; DeZoort et al. 2003; Perloff 2003).[3] In Figure 1, as the perceived credibility increases, so does the amount of investors' belief revision.

Period One

No Prior Information About Management's Forecast Accuracy

Period Two

Management's Forecast Inaccuracy for Period One is Known

H3
Change in Perceived Credibility From Period One to Period Two

Perceived Credibility:

Expertise

Trustworthiness

Intention

Perceived Credibility:

Expertise

Trustworthiness

Intention

Management's Internal Control Letter:

-High Intention Tone

-No Intention Tone

H1

H2

Management's Earnings Results Letter:

-High Intention Tone

-No Intention Tone

Investor's Belief Revision (Change in EPS Predictions Period One, Before and After Management's Prediction)

Change In Investor's Belief Revision (Change in EPS Predictions Period Two, Before and After Management's Prediction)

H4
Difference in Change in Investor's Belief Revision From Period One to Period Two

Figure 1. Investor Belief Revision Model

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[3] The circumstances in which more credibility does not equal more opinion change are discussed in detail in Appendix A as moderators to the model of credibility.

As indicated, support for the impact of perceived credibility on belief

revision is found in marketing and psychology research (Gotlieb et al. 1992;

Goldsmith et al. 2000; Lafferty et al. 2002). Goldsmith et al. (2000) examined

both corporate credibility and endorser credibility and found that both impact

users' intentions to purchase products. The endorser credibility impacted the

users' attitude toward the advertisement, which in turn affected their intention to

purchase, and attitude toward the brand. However, corporate credibility directly

impacted users' intention to purchase, as well as attitude toward the brand and

attitude toward the ad (Goldsmith et al. 2000). Lafferty et al. (2002) tested the

results of Goldsmith et al. (2000) and found support for corporate credibility

directly impacting intention to purchase as well as the other paths found in

Goldsmith et al. (2000). In several disciplines, the "intention to act" construct is

used as a proxy for actual behavior based on the theory of planned behavior

(Ajzen 2001). This link between perceived credibility and user behavior provides

support for the belief that investors' perceptions of management's credibility can

impact investors' decision-making.

2.2.5   Perceived Management Credibility Factors

In order to understand what makes a communicator credible it is important

to understand the factors that affect perceived credibility. Most studies of

credibility use a two-factor model of credibility similar to the one used in Mercer's

(2005) study, with the two factors being expertise and trustworthiness

(McGinnies and Ward 1980). This study employs the McCroskey and Teven

(1999) model of credibility, which includes three factors: expertise,

trustworthiness and intentions. Since this model has not been used in judgment and decision making research, a factor analysis was conducted to examine the three factors. Using an oblique rotation, the factor analysis suggested the 18 questions loaded on three unique factors[4]. Sixteen of the questions loaded on the correct factor, while two questions loaded higher on a factor other than their expected variable. The three original variables from McCroskey and Teven's (1999) model were used in this study. No adjustment was made to the model for the two variables that loaded on a different factor in the factor analysis. Rather than examining the three factors individually, the main analyses in this study use all 18 questions of the credibility scale to measure total credibility. Thus, the discrepancy in the factor loadings does not impact the analyses in this study but should be addressed in future research. To determine if the three sub-factors were measuring the same higher level credibility factor a Cronbach's Alpha was calculated for the responses to the scale in the study from period one and period two. The three sub-factors of credibility had a Cronbach's Alpha of .912 for period one and .926 for period two.

2.2.5.1   Expertise

Hovland et al. (1953) define expertness as "the extent to which a communicator is perceived to be a source of valid assertions" (pg. 21). The more a perceiver believes someone is an expert in his/her field, the more credible the perceiver will find the communicator's messages as they pertain to that particular

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[4] Two factors had Eigenvalues above 1 (11.959 and 1.706) with a third factor having an Eigenvalue of .97.

field. Prior research has found many different attributes can signal that someone is an expert (Hovland et al. 1953). Hovland et al. (1953) identify age, position of leadership, and similarity between perceiver and communicator as factors that may invoke a perception of expertise. The research to date (Hovland and Weiss 1951; Hovland et al. 1953; O'Keefe 1990; Perloff 2003), indicates that communicators who are perceived as having greater expertise will be found to be more credible. The perception of expertise should be held constant in period one of the study. However, the manipulation in period two should cause expertise to drop since management fails to meet its forecast.

2.2.5.2   Trustworthiness

Hovland et al. (1953) define trustworthiness as "the degree of confidence in the communicator's intent to communicate the assertions he considers most valid" (pg. 21). It is possible for a communicator to be an expert in his/her domain but decide to communicate statements known to be invalid (Hovland et al. 1953). Message recipients must form an opinion as to whether they believe an expert communicator is communicating truthfully. Those communicators perceived to be communicating truthfully are thought to have greater credibility. The perception of trustworthiness should be constant in period one of the study. However, the manipulation in period two should cause trustworthiness to drop since management fails to meet its forecast.

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2.2.5.3   Goodwill (Intention Toward the Receiver)

Hovland et al. (1953) also discussed a third factor of credibility, which they called "intention toward the receiver." As stated previously, trustworthiness measures the degree of confidence a receiver has in a communicator's intention. The intention toward the receiver construct is the belief a receiver has about the communicator's intention for communicating an assertion. Intention toward the receiver measures the belief about the communicator's intentions, and trustworthiness measures the degree of confidence in the belief. McCroskey and Teven (1999) propose that the construct's goodwill and intentions towards the receiver are the same; thus, the third factor in their model of credibility is goodwill. Goodwill has been excluded in some credibility models over the years because researchers believed that goodwill could not be measured properly (McCroskey and Teven 1999). McCroskey and Teven (1999) blame the poor measurements on factor analytic models that included extraneous "person perception" variables that hindered results.

In this study, I will use McCroskey and Teven's (1999) validated instrument to measure goodwill. However, I use the term "intention" or "intention toward the receiver," since the term "goodwill" has another connotation in the field of accounting. (In accounting, goodwill is a measure of the purchase price of a company over its fair value.) There are three distinct elements to the intention factor: understanding, empathy, and responsiveness (McCroskey and Teven 1999). Understanding is defined as knowing another person's ideas, feelings,

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and needs. Empathy is an acceptance of another's view as valid. Responsiveness is viewed as the attentiveness of one to another.

2.2.5.4   Other Factors That Can Impact the Effect of Credibility

There are other factors that have been identified in the psychology literature that are believed to moderate credibility's impact on belief revision. For example, the expected and actual position advocated by the message have been found to affect the perception of credibility factors (Eagly et al. 1978). How well liked the communicator is can affect credibility (Heider 1958; McCroskey 1966). Contextual factors such as the message recipient's level of involvement with the topic (a combination of expertise and motivation), the degree of difference between current receiver beliefs and the beliefs presented in the message, and timing of identifying the communicator have been found to impact the effect credibility has on a message recipient's belief revision (O'Keefe 1990). Because these factors are theoretically important, they will be included as possible covariates in the experiment; however, only the intention factor of credibility is measured in the current study. See Appendix A for a discussion of the moderating factors.

2.2.6   Measuring Credibility Factors

While only one other accounting study (Mercer 2005) has tested credibility as a perception variable, other studies in accounting have explored the concept of credibility. Most studies, even in psychology, have difficulty separating and manipulating the first two factors of credibility, expertise and trustworthiness

(O'Keefe 1990). This is especially true in accounting studies, where one measure for management credibility is management's past forecast accuracy (Williams 1996; Hirst et al. 1999). Past accuracy in forecasting is a noisy measure of expertise or trustworthiness since participants do not know if management failed to make its forecast because it did not have the expertise to forecast correctly, or because it was intentionally misleading investors.

2.2.6.1   Forecast Accuracy Information

As indicated in the prior paragraph, extant accounting studies looking at the relationship between management's credibility and investors' reactions to forecasts have used management's prior forecast accuracy as a proxy for management's forecast credibility (Baginski and Hassell 1990; Williams 1996; Hirst et al. 1999; Mercer 2001; Mercer 2004; Mercer 2005). Some studies assumed that investors' reactions to an earnings forecast are a function of management's credibility and the surprise or newness of the information being presented (Jennings 1987; Baginski and Hassell 1990; Williams 1996). Mercer's studies (2001, 2004, 2005) measured management's credibility as a perception variable with two factors, expertise and trustworthiness. Consistent with research findings that it is difficult to separate expertise and trustworthiness, Mercer found expertise and trustworthiness highly correlated variables that move together.

Hirst et al. (1999) found evidence that credibility, as measured by prior forecast accuracy, was a significant factor in the earnings predictions of investors who used a management forecast in their decision-making. Archival studies have also explored the relationship between management's prior accuracy in

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forecasting and the reaction of analysts to subsequent forecasts (Hassell et al. 1988; Williams 1996). These studies differ only in the methods used and measurement of the variables. For example, Hassell et al.(1988) measured the effect of management earnings forecasts on the revision in earnings estimates of analysts, where the amount of change in analyst forecasts was dependent on management's credibility as measured by the difference in earnings forecasts to actual earnings. They used the ex-post accuracy (actual accuracy) of previous forecasts to define management's credibility. They found that analyst forecasts did change after the release of a management projection. The study implies that analysts' beliefs were revised based on the credibility (prior accuracy) of management forecasts.

Williams (1996) also studied prior forecast accuracy of management and operationalized prior accuracy as prior forecast usefulness, where usefulness is measured by whether a user would have been better off adjusting expectations of earnings to management's forecast in a prior period. The relationship between the usefulness of a prior earnings forecast and analysts' responses to a current forecast was studied. Exogenous variables, such as timing of the forecast and market price reactions, were controlled. As predicted, management's credibility (as determined by its prior forecasting ability) affected the way in which analysts reacted to current forecasts (Williams 1996). Therefore, when management's prior forecasts were accurate, investors' perceptions of management's credibility increased. The increases in perceived credibility lead to analysts relying on future management forecasts when making their own forecasts.

Benjamin and Strawser (1976) conducted a behavioral study that looked at prior forecast accuracy. They gave investors annual reports that had earnings forecasts contained within the notes to the financial statements. Participants were told of the prior year's forecast and actual results. Prior forecast accuracy was found to increase investors' perceived credibility of management's current forecast, as measured by participants' earnings per share predictions relative to management's forecast.

In the Benjamin and Strawser study, participants were given explanations as to why prior management forecasts may have been inaccurate. These explanations included environmental variables that would not be directly attributable to management. Thus, Benjamin and Strawser's results may have been affected by beliefs that management was not to blame for failing to forecast correctly. Accordingly, the effect on investor's perceptions of management being at fault for an inaccurate forecast is not known.

The accuracy of an earnings forecast is a function of management's forecasting ability and the business risks facing the firm (Davidson and Neu 1993). Figure 2 models this relationship as presented in Davidson and Neu (1993). A manager can only make a forecast based on contemporaneous information available at the time he/she forecasts. If management uses sound procedures and valid assumptions in forecasting and still fails to forecast accurately, unforeseeable business risk factors could be contributing to actual earnings deviating from the forecast. Based on Davidson and Neu (1993), it is possible management's prior forecast accuracy is a poor proxy for

management's credibility. Further complicating the validity of forecast accuracy

as a proxy for credibility is fundamental attribution error theory. This theory

predicts that people are more likely to attribute outcomes of events to

dispositional factors rather than to situational factors (Heider 1958). Dispositional

factors are internal factors associated with a person and situational factors are

outside the control of an individual.
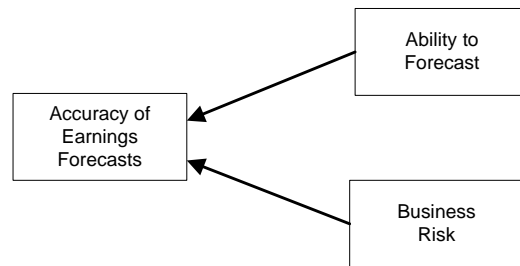
Figure 2. Factors Affecting Management Forecasts (From Davidson and Nue, 1993)

Two important dispositional factors discussed by Heider (1958) are

intention and ability. Intention is someone's desire to do and act, and ability is the

individual's power to take action. These constructs are similar in nature to the

expertise, trustworthiness, and intention factors of credibility. Expertise is a level

of ability. Intention is an external perception of someone's desires, and

trustworthiness is the belief that someone will or will not attempt to act on his/her

desires. The components of credibility (expertise, trustworthiness, and intention)

are all dispositional factors. Therefore, attribution theory (Heider 1958; Kelley

1973; Reagan et al. 1974; Wood and Eagly 1981) suggests that investors would

blame management's failure to forecast accurately on internal factors, absent an

external reason given for management's failure. Investors may believe that a

missed forecast was due to such internal factors as management's lack of expertise in forecasting or management's willingness to forecast accurately (trustworthiness), thus reducing management's credibility. Conversely, investors' perceptions of management's credibility increase when management's prior forecasting accuracy increases (Jennings 1987; Williams 1996; Hirst et al. 1999).

Williams (1996) found that analysts relied more upon current management forecasts when management's forecasts were more useful in the past. Management's forecasts were considered more useful if, in the past, the new information management gave in its forecast was more accurate than the analysts' current estimates. For example, two firms could predict and achieve their earnings per share at exactly the same amount of $4.00 per share. However, if analysts for the two firms expected that earnings would be $3.75 and $3.50, respectively, then management's forecast was more useful in the case of the firm with the $3.50 analysts' expectation. The Williams (1996) study was conducted using actual stock market forecast revisions made by analysts following an actual disclosure from a publicly traded company. Analysts' forecast revisions were observed and management's prior forecast accuracy was measured based on management's real prior forecasts. Since the study was conducted using only archival data, there is no way to know if analysts actually used management's prior forecast accuracy when making their revisions.

As shown by the review of prior studies, management's accuracy in prior forecasting has a large impact on management's credibility. The impact on management's credibility in turn impacts the amount of investor belief revision

when management issues a forecast. In this study, two conditions of accuracy will be used. In the first condition participants will have no knowledge of management's prior accuracy. In the second condition participants will not be told of management's accuracy but they will be given a prior forecast from management that they will subsequently learn is inaccurate; thus, experiencing the inaccuracy first hand.

2.2.6.2 Tone of Communications

There is anecdotal evidence that management's tone in communicating with investors can affect management's perceived credibility with investors. Articles in recent public relations journals tout strategies that say management can increase or regain its credibility with investors by altering its tone in communications with investors, such as the company's annual report (Budd 2000; Calvey 2001; O'Brien 2001; Thompson 2002; Leckey 2003). At the same time, investor publications tell investors they can learn about a company from the tone a company takes in communicating with its shareholders (Rodgers 2002).

Most shareholders will never physically meet the management of the companies in which they invest. Management's communications to shareholders are often the only direct contact shareholders have with a company. It would be logical to assume that these written communications from management may be the best opportunity management has to convey its goodwill (intentions) toward investors. Thompson (2002) suggests that management can regain lost credibility by issuing communications to investors that "shoot straight." Could it be this simple for management to regain some of its lost credibility?

The intention of this study is to test management's ability to increase its rating of credibility by communicating its intention toward investors via a written communication that conveys management's understanding, empathy, and responsiveness. In period one, half the participants will receive an altered statement of internal control letter from management intended to convey its understanding, empathy, and responsiveness (intentions) at a high level. The treatment group receiving the high level letter will be referred to as the "high intention" treatment while the other treatment will be referred to as the "no intention" treatment. Participants who perceive that management has better intentions toward them should rate management's credibility higher than participants without such a perception.[5]

Therefore, H1 states:

H1: Participants who receive an internal control letter from management with a high intention tone will rate management's credibility higher than participants who are given an internal control letter with no intention tone.

Hypothesis 1 predicts that participants will rate management's credibility higher after receiving the internal control letter from management seeded with a high intention tone. Although McCroskey and Teven (1999) have already established this link using the credibility scale, credibility is also known to impact participants' reliance on management's forecasts. In accounting research, management's perceived credibility is measured by the amount of revision participants make when receiving earnings guidance from management, *ceteris*

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[5] In period one of the study, only the intention variable of credibility has been manipulated in the communication; therefore, no predictions are made regarding the expertise and trustworthy factors of credibility.

paribus (Patell 1976; King et al. 1990; Williams 1996; Hirst et al. 1999; Mercer 2001). Based on source credibility theory, higher perceived management credibility yields a greater amount of reliance by participants on management's forecast. The greater the amount of reliance on management's information the more credible management is thought to be. Therefore, consistent with source credibility theory, H2 predicts that participants who are given written communications from management (management's internal control letter in period one of this study) with a high intention tone will perceive management as having higher credibility, and thus will rely on management's forecast by revising their earnings per share predictions closer (greater revision) to management's predictions.[6]

> H2: Participants who receive an internal control letter from management with a high intention tone will rely more on management's forecasts by revising their earnings per share estimates closer to management's predictions than participants who receive an internal control letter with no intention tone.

2.2.6.2   Tone of Communications versus Inaccurate Forecast

The intention factor of credibility has not heretofore been studied in a judgment and decision-making setting. This study is designed to test the impact of management's tone in communications on management's credibility, including the intention factor, and then to test the ensuing effects on participants' belief revisions. It is expected that the results of period one will show that the tone

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[6] The treatment in period one is the tone of the communication by management to shareholders. This tone is expected to impact the investors' perception of management credibility. The letter used in period one of this study (the statement on the effectiveness of internal controls) is not expected to impact investor's initial earnings per share estimates, only their perception of management's credibility, and therefore their future reliance on management's forecasts.

management has with participants can increase its credibility. What is not known is whether that increase in credibility can substitute or outweigh the other two factors of credibility: expertise and trustworthiness. In order to test whether the different factors of credibility are substitutes for one another, the study will manipulate management's accuracy between a level where participants have no knowledge of management's past accuracy (period one) and a level where they know management has forecasted inaccurately (period two). In period two of this study all of the participants have had a previous experience with management in which management failed to meet an earnings per share forecast. It is expected that the participants will reduce their rating of management's overall credibility, including their rating of management's expertise and trustworthiness. Participants will receive a letter from management notifying them of management's failure to meet its earnings per share estimate. The tone of the letter will be manipulated at two levels; one with a high intention tone and one with the no intention tone. When management forecasts inaccurately, its credibility should drop and participants should rely less on management's forecast. But if management's tone in letters to shareholders increases its intention factor of credibility when using a high intention tone, it should increase overall perceived credibility and allow management to effectively persuade participants of management's beliefs.

Therefore, H3 predicts that management's tone in communications can mitigate lost credibility ratings from failing to forecast accurately. Based on source credibility theory, H4 predicts that management's tone in communications can also lead to greater reliance on future management forecasts.

H3: Participants who receive an inaccurate forecast from management and receive an earnings notification letter from management with a high intention tone will not lower management's credibility rating as much as participants who receive an inaccurate forecast from management and who are given an earnings notification letter from management with no intention tone.

H4: Participants who are notified of an inaccurate forecast from management by an earnings notification letter that conveys a high intention tone will reduce the amount they rely on management's future forecasts less than participants who receive an earnings notification letter from management conveying no intention tone.

3.0 Research Method

3.1   Introduction

In Chapter 2 a theoretical model was developed and hypotheses were proposed. This chapter details the testing of those hypotheses. A description of the research design, including a description of the task and participants is presented. The measured and manipulated variables in this study will then be discussed. The measured variables include the dependent variables and the covariates. The manipulated variables are the independent variables. Following the discussion of the variables, a discussion of the three pilot studies that tested the research materials is presented. The chapter ends with a discussion regarding the overall findings from the pilot studies.

3.2 Research Design

All participants completed the task under both a condition of no prior information about management's forecast accuracy (period one) and under a condition where participants had knowledge that management had previously forecasted inaccurately (period two). The independent variable for all four hypotheses is the tone of the communications. Tone is a between participant factor (high intention and no intention) in both period one and period two. In period one, tone is manipulated using the statement on internal control effectiveness by management. In period two, tone is manipulated using a letter

from management regarding actual earnings from period one. Four dependent variables are measured in this study. In period one there are two dependent variables; the rating of management's credibility and participants' reliance on management's forecasts. In period two of the study the same two pieces of information are collected as in period one but the dependent variables are constructed as the difference between the measured variables in period one and period two. Therefore, the two dependent variables in period two are; 1) the difference in management's credibility rating, and 2) the difference in reliance on management's forecasts.

Management's credibility rating is measured using a previously validated 18-question credibility scale (McCroskey and Teven 1999). In H1, the credibility scores between the two treatment groups (high intention statement on internal controls vs. no intention statement on internal controls) are compared. For H3, the difference in credibility ratings (credibility in period two less credibility in period one) between the two treatment groups (high intention earnings letter and no intention earnings letter) is compared.

Participant reliance on management's forecasts is a measure of the percentage change participants make in their forecasts after receiving management's forecast. In H2 the percentage change in forecasts made by participants from before to after management's forecast is compared between treatment groups (high intention statement on internal controls vs. no intention statement on internal controls). For H4 the variable measured is the difference in the percent change in forecasts made from period one to period two, which is

compared between treatment groups (high intention earnings letter and no intention earnings letter).

3.3 Task

An Internet-based laboratory experiment was conducted. The experimental materials resided on a local Web site. Participants signed up for scheduled experimental runs. A facilitator read the study's instructions and provided each of the participants with a computer disk. The disk contained a hyperlink to the Web page, which randomized each participant into one of the four treatments in the study.

The study's task required participants to make earnings per share estimates after reviewing the background and financial statements of a selected company. Participants also rated management's credibility using the McCroskey and Teven (1999) scale.

The experimental task was adapted from prior research studies by Hirst et al. (1999) and Mercer (2005). Task materials regarding the company, including company background, products, and financial statements were directly adapted from Mercer (2005). The task of predicting earnings per share was adapted from Hirst, et al. (1999). Hirst, et al. (1999) used this task to study the joint effects of management's prior forecast accuracy and the form of a financial forecast on participants' judgments.

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Table 1: Overview of Steps in Study

1. General instructions about the study
2. Participant informed consent
3. Introduction to task
4. Study background information
5. Company background information
6. Overview of company products

7. Internal control letter
    a. High intention
    b. No intention

8. Financial statements (income statement and balance sheet)
9. Participants provide initial earnings per share estimate for period one
10. Participants are given management's earnings per share estimate for period one
11. Participants revise their earnings per share estimate for period one
12. Participants complete the credibility rating for period one
a. Expertise factors
b. Intention factors
c. Trust factors
13. Participants are given the financial results letter for period one (with actual earnings per share)
a. High intention version of letter
b. No intention version of letter
14. Company financial statements with period 1 actual results
15. Participants provide initial earnings per share estimate for period 2.
16. Participants are given management's EPS prediction for period 2
17. Participants revise their earnings per share estimate for period 2
18. Participants complete the credibility ratings for period two
a. Expertise factors
b. Intention factors
c. Trust factors
19. Participants answer manipulation check questions
20. Participants answer covariate questions – fraud
21. Participants answer covariate questions – Sarbanes-Oxley
22. Participants answer demographic covariate questions
23. Participants answer possible covariate questions – prior investing experience
24. Participants answer theoretically derived covariate questions
25. Participants are allowed to provide feedback regarding their experience
26. Participants view the finished screen which thanks them for participating

Table 1 provides an overview of the steps of the task. A step by step progression of the study is presented in Appendix B with screen shots from the study, including descriptions of each step required of the participants. The steps referenced in this section refer to the corresponding steps in Table 1

Before they began the task, the participants read general instructions (step 1) for the experiment and were given an informed consent form (step 2). After participants elected to participate in the study (the informed consent), they were given an introduction to the task and asked to assume the role of an investor evaluating the subject company (step 3). They were then given a short description of the company, its products, and the industry in which the company operates (steps 4-6).

Participants were also given a management letter regarding the company's internal controls over financial reporting pursuant to PCAOB Auditing Standard No. 2 (step 7). Half of the participants received this letter in a manner that conveyed a message of high intention tone by management (step 7a). The other half of the participants received the required letter without the intention tone manipulation (step 7b). The participants then received three years of financial statement data (step 8). The balance sheets and income statements were identical for all treatment groups in stage one.

Participants were told they were looking at this information as of January 1 of the current year (period one). Once the participants had reviewed all of the background material about the company (steps 4-6), the internal control letter at either a high intention (step 7a) or no intention (step 7b), and the financial

statements (step 8), they were asked to predict the company's earnings per share for the first year (step 9).

The participants were then given management's earnings per share forecast for period one (step 10). At this point in the study, none of the participants had any knowledge of management's past forecast accuracy and were, therefore, in the no prior accuracy treatment. The prediction of earnings per share made by management was automatically generated based on the participant's earnings per share prediction in step 9. The management forecast was 132 percent higher than the participant's response from step 9. After receiving management's forecast, participants were given a chance to adjust their prediction of earnings per share for period one (step 11). The adjustment made by participants is the dependent variable for H2, reliance on management forecasts. The participants then completed the credibility measurement instrument (step 12 a,b,c). The credibility measurement instrument is an 11-point Likert scale with 18 questions designed to measure the three factors of credibility: expertise (step 12a), intention (step 12b), and trustworthiness (step 12c). Credibility rating is the dependent variable for H1 in the study.

The participants were given a letter from management (step 13) that notified participants of the actual results for the year (period one). Participants were told the difference between what management predicted and actual results. The letter stated that management failed to meet its prediction of earnings per share by 17 percent (109 percent of the participant's earnings per share). The tone of the letter from management was determined by whether participants were

in the high intention (13a) or no intention (13b) tone-of-the-financial-letter treatment conditions. One half of the participants received in the letter a statement that conveyed a message of high intentions by management (step 13a). The other half of the participants received a letter that only stated the results for the year (period one) and the difference between what management predicted and actual results (step 13b).

In the next stage of the study participants were given the financial income statement that included the actual results for period one (step 14). The income statement reflected the financial results the participants were told about in the management letter (see step 13a or 13b). The participants were then asked to make a prediction of earnings for the second year (period two) (step 15) for the same company.

After making their earnings per share predictions for period two, participants were given management's earnings per share prediction for period two (step 16). Management's forecast was 132 percent higher than the prediction made by the participants. After receiving management's estimate, participants were given an opportunity to revise their forecast for the second year (step 17). Participant's revised forecast for year two was used to calculate the dependent variable for H4, difference in reliance on management's forecast. After revising their forecasted earnings per share, participants were asked to complete the credibility measurement instrument for the second time (step 18a-c). The credibility rating in period two was used to calculate the dependent variable for H3, difference in credibility ratings.

After finishing the main part of the study, the participants answered several different types of questions including: manipulation check questions (step 19), covariate questions regarding fraud (step 20), covariate questions regarding Sarbanes-Oxley (step 21), demographic questions (step 22), and other questions that were included in the study to identify possible covariates based on the participant's past investing experiences (step 23) and theoretical models (step 24). Participants were also given a chance to provide feedback about the study (step 25). Finally, participants were thanked for participating in the study and asked not to discuss the study with others until they had been debriefed (step 26).

3.4 Participants

The participants for the main study are discussed in the Chapter 4. All participants for the pilot studies were students, and are discussed, respectively, with each pilot study.

3.5 Measured Variables

This section describes each of the independent variables, dependent variables, and covariates that are captured and/or measured in this study.

3.5.1 Independent Variables

The independent variables for this study are forecast accuracy and management's tone in its letter to investors (participants). These variables are discussed in the following sections. A third variable (surprise) will also be

discussed, since it is theoretically important to the study; however, this variable is held constant in the study.

3.5.1.1   Forecast Accuracy

Management's forecast accuracy has been used as a proxy for management's credibility (Williams 1996; Hirst et al. 1999; Mercer 2001; Mercer 2005). In this study management's forecast accuracy was manipulated at two levels, no information and inaccurate information. In the no information condition none of the participants had knowledge of management's prior accuracy. The no information condition occurs in period one of the task.

The inaccurate condition in this study occurs in period two. In period two, all of the participants knew the earnings forecast from management in period one was inaccurate. In prior studies, participants were only told that management had been accurate or inaccurate (Hirst et al. 1999). In this study, the participants are aware of management's predictions in period one and the actual results of period one.

A decision was made not to include a third level where participants know that management has been accurate in forecasting. Prior studies have found that when management's prior accuracy is high investors perceive management's credibility as high and few other variables can increase management's credibility to a higher level (Hirst et al. 1999).[7] The high accuracy variable level was purposefully omitted from the study to reduce the size and complexity of the study.

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[7] This finding may be the result of a ceiling effect.

3.5.1.2   Management's Tone

Management's tone was manipulated at two different times during the study. There are two levels of management's tone manipulation; one is a high intention tone and the second is a no intention tone. In the high intention treatments, the wording in the letters was consistent with management displaying the three sub-factors of the intention factor of credibility: understanding, empathy, and responsiveness toward participants. The letters can be seen in Appendix B (step 8 and 14).

The first tone manipulation between groups occurred in the letter from management discussing the company's internal controls over financial reporting, as required by the PCAOB Auditing Standard No. 2. This letter was included with the company's background and historical financial statements. While the internal control letter is required by the PCAOB, the exact wording of the letter has been left to management. This study manipulates a single paragraph of this letter to convey a high intention or no intention tone to participants.

The second tone manipulation is in the form of a letter from management disclosing the actual earnings of the company for the prior year (period one) of operations. Management's tone is manipulated at two levels, high intention and no intention.

3.5.1.3   Surprise

Surprise measures the difference between participants initial expectation of earnings per share and management's prediction of earnings per share. The amount of surprise was set to 32 percent above participants' initial prediction for

all treatment conditions. To obtain a sufficient treatment effect, 32 percent was selected based upon the results of pilot test one.

Although the surprise variable is held constant across treatment conditions, it is an important variable in comparing this research model to prior studies. Past studies have used proxies to measure the market's initial level of belief. In behavioral studies such as Hirst et al. (1999), participants were given analysts' consensus estimates as an initial level of belief and then asked to make their estimates of earnings per share. While this method seems to give all participants a similar anchor, the participants still have some prior belief. The difference between participant's prior level of belief and the anchor given to them cannot be measured in those studies. In this study, the participants gave their earnings per share estimate without being given any confounding anchors. The treatments for the remainder of the study were then based on the participant's initial earnings per share estimates.

Basing the treatments on the participant's initial level of belief eliminates another type of potential bias. Studies that use a constant dollar amount for surprise may introduce an unintended bias. If one participant's initial level of belief is $1.00 and management's estimate is $1.50 the surprise is $.50, which is a 50 percent increase over the initial level of belief. Another participant may have an initial belief of $1.25 and when given management's estimate of $1.50 he/she only has a 20 percent increase over the initial level of belief. In an attempt to eliminate this bias, this study uses relative percentages, instead of incremental adjustments measured in dollars.

3.5.2   Dependent Variables

The dependent variables for this study are management's credibility rating (H1), participants' reliance on management's forecasts (H2), the difference in credibility ratings from period one to period two (H3), and the difference in reliance on management's forecast from period one to period two (H4). Each of these variables is discussed below. Variables H1 and H3 are discussed first followed by H2 and H4.

3.5.2.1   Management Credibility Rating (H1)

The first dependent variable captured in this study is management's credibility rating. The credibility rating was measured using the McCroskey and Teven (1999) scale. The scale is located in Appendix B (steps 12a,b,c & 18a,b,c). Eighteen questions are used in the scale to determine participants' perception of management's credibility. The scale measures credibility along three factors: (a) competence, (b) intention, and (c) trustworthiness. Management's credibility rating is reported as the average of all 18 scale questions.

3.5.2.2   The Difference in Credibility Ratings (H3)

Participants were asked to complete the credibility scale twice. The first time participants complete the scale is after revising their earnings per share forecasts in period one. Participants were also asked to complete the scale after revising their forecast in period two. The difference in credibility ratings measures

the difference between participants' ratings of management's credibility from period one to period two in the study.

3.5.2.3   Reliance on Management's Forecast (H2)

Reliance on management's forecast measures the difference between the participants' first earnings per share estimate and their revised earnings per share estimate after receiving management's forecast.

The participants are asked to forecast the earnings per share of the company in period one based on the background financial data about the company. They are then given management's forecast of earnings per share for the same time period. Management's forecast will always be 132 percent of the earnings prediction made by the participant. Participants are provided a chance to modify their earnings per share estimate after receiving management's forecast.

Table 2, Panel A demonstrates the measurement of reliance on management's forecast. To measure the participant's reliance on management's forecast, first the amount of surprise in management's forecast is calculated. As stated above, all participants make a forecast for period one (EPS1) and receive a forecast from management (MEPS) that is 32 percent higher than the participant's initial earnings per share estimate. Thus, all participants have a surprise of 32 percent of their initial forecast. Surprise is the denominator in the calculation of reliance. As can be seen in Table 2, Panel A, a participant with an initial earnings per share estimate of $2.00 is given information from management with $.64 of surprise ([MEPS- EPS1] or [$2.00 * .32]).

Table 2: Reliance on Management's Forecast (H2) and Difference in Reliance on Management's Forecasts Calculations (H4)

Panel A: Reliance on Management's Forecast (H2) as Measured by the Percentage Change in Earnings Per Share Estimate

$$\frac{\text{Revision}}{\text{Surprise}} = \frac{\text{EPS2} - \text{EPS1}}{\text{MEPS} - \text{EPS1}} = \frac{2.40 - 2.00}{2.64 - 2.00} = \frac{0.40}{0.64} = 63\%$$

Panel B: Difference in Reliance on Management's Forecasts (H4)

Percentage Change in EPS Period One – Percentage Change in EPS Period Two*

   63%   -   40%

Reliance dropped by 23%

EPS1: Initial earnings per share estimate made by participant.
EPS2: Revised earnings per share estimate made by participant
MEPS: Management's estimate of earnings per share for period
* The reliance on management's forecast for period two is calculated exactly as the reliance on management's forecast for period one. H4 only uses the difference between the two reliance measures; no hypothesis was made for the reliance on management's forecast in period two.

Once the amount of management's surprise is calculated, the amount of revision in the participant's forecasts is calculated. The revision in a participant's forecast is calculated by subtracting the initial earnings per share estimate (EPS1) from the revised earnings per share estimate (EPS2). For example, in Table 2, Panel A, the initial earnings per share estimate is $2.00 and the revised earnings per share estimate is $2.40. Thus, the revision in earnings per share is $.40.

After the revision and the surprise have been calculated, the revision is divided by the surprise to determine what percentage of management's new information was relied upon in revising the participant's earnings forecast. In the example in Table 2, Panel A the revision of $.40 was divided by the surprise of $.64. In the example, the participant made a 63 percent adjustment to

management's new information. If the participant had revised his/her earnings per share estimates to $2.64, reliance on management's forecast would have been 100 percent.

3.5.2.4 Difference in Reliance on Management's Forecast (H4)

To calculate the difference in reliance on management's forecasts (H4), the reliance on management's forecast is measured twice in this study, once in period one and once in period two. So that reliance can be measured in period two, participants will be asked to give an earnings-per-share prediction for period two. As in period one, participants will be given management's forecast of earnings per share for period two, which will again be 32 percent higher than participants' estimates. After receiving management's earnings per share forecast for period two, participants will be given a chance to modify their forecast. Panel A of Table 2 provided a demonstration of how the reliance on management's forecast is calculated in period one. The reliance on management's forecast in period two is calculated the same way. No hypotheses are given regarding the reliance on management's forecast in period two, instead this study examines the difference in reliance on management's forecasts (H4) by subtracting the period one reliance measure from the period two reliance measure. Panel B of Table 2 demonstrates this calculation using the numbers for period one as calculated in Panel A. Assume in period two the participant had a reliance on management's forecast of 40 percent. Therefore, the difference in reliance on management's forecasts is 23 percent (63 percent – 40 percent). This signifies a 23 percent drop in reliance.

3.5.2.5   Covariates

Data about possible covariates were captured and tested. A thorough

discussion of the covariates measured and tested in this study appears in

Chapter 4. The task in this study required participants to review financial

statements and forecast earnings per share estimates. The covariates discussed

in Chapter 4 include the participants' prior experience with financial statements or

forecasting, their level of investing activity, their background (major), and gender.

Other possible covariates were theoretically derived from persuasion studies and

are discussed in both Chapter 4 and Appendix A (O'Keefe 1990).

3.6 Pilot Studies

Before the main study was run, three separate pilot studies were

conducted. Two pilot studies were used to design and test some of the

experimental treatments used in the study. The third pilot test was conducted to

test the overall research instrument and the effect of the treatments on the

dependent variables.

3.6.1 Pilot Study One

The first pilot study was designed to test the level of surprise necessary to

generate a sufficient size effect. The pilot study was conducted using 19

students enrolled in an accounting information systems course at a large

southeastern university. Each participant was given four treatments which were

comprised of different statements regarding differences between management

and analysts' forecasts. They were then asked to use a seven-point Likert scale

to rate the difference between analysts' forecasts and management's as to the significance of the difference and how surprising they found the difference. Neither significance nor surprise was defined for participants. Both terms (significant and surprising) were selected to determine how large management's earnings per share estimate would have to be to create a perceived significant difference. Participants were asked if they felt the difference between management's forecast and the analysts' forecasts was significant and then were allowed to draw their own conclusion. Appendix C contains the complete questionnaire used in pilot study one.

A decision was made to use analysts' forecasts in the experimental materials because participants were not given background data regarding the company or financial statements. Additionally, it would not be feasible to tell the participants what their forecast was and use that as a proxy for their true beliefs. Instead, analysts' forecasts were used to examine the amount of difference needed between a believable external forecast and management's forecast.

Management's forecast varied between the four treatments as did the percentage of surprise (Table 3). Forecasts were set at four different dollar amounts with the surprise varying for each amount. The dollar amounts and the surprise are indicated in Table 3:

Table 3: Pilot Study One Surprise Analysis

Management's Forecast	Percentage of Surprise	Analyst Forecast	Difference
$1.23	10%	$1.35	$0.12
$1.55	20%	$1.86	$0.31
$1.75	30%	$2.27	$0.53
$1.10	40%	$1.54	$0.44

The dollar amount of management's forecasts and the percentage of surprise were arbitrarily selected to determine an approximate percentage at which participants would feel there was a significant difference between management's forecast and the analysts' forecasts. The amount of management's forecast increases over the first three treatments, up to $1.75, and in the fourth treatment the amount of the forecast decreases to $1.10. This was done to examine whether the surprise was being generated by the dollar amount of the difference or by the percentage difference.

An ANOVA was performed to determine if the changes in the difference between management's forecast and the analyst's forecast had an effect on participants' ratings of surprise and significance on the seven-point Likert scale. Overall, the change in percentage differences was significantly associated with surprise ($F=11.52$, two-tailed $p =.001$) and significance ($F= 10.23$, two-tailed $p= .001$). Table 4 presents the means and standard deviations of the surprise and significance questions for each of the treatments.

Table 4: Means and Standard Deviation for the Seven-point Likert Scale Ratings of Surprise and Significance

Treatment	N	Surprise Mean (Standard Deviation)	Significance Mean (Standard Deviation)
10%	19	3.263 (1.147)	4.368 (1.383)
20%	19	4.000 (1.105)	5.526 (1.172)
30%	19	5.526 (1.218)	6.368 (0.831)
40%	19	4.947 (1.615)	5.894 (1.197)
Scale end points were 1 = Insignificant to 7 = Significant			

A Scheffe's test was used to determine if there was a significant difference between the treatment groups. For the significance variable, the 10 percent group was significantly different from all other treatments. No other significant differences were found. For the surprise variable, there were no significant differences among groups. The lack of significant differences among treatment groups may have been due to the design of the instrument. The 40 percent treatment resulted in a lower dollar difference than the 30 percent treatment. Therefore, the results were re-computed eliminating the 40 percent treatment. In this analysis, the 30 percent treatment was significantly different from the remaining two groups for both measures.

After consideration of the results of this pilot study, 32 percent [8] was selected as the difference between participants' initial forecast and management's forecast for the main pilot study (pilot study 3).

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[8] Although 30% was the amount tested, 32% was used to limit participant's ability to guess that management's forecast was a percentage of theirs. If participants predicted an even number like $1.00, they may figure out by period two that management's prediction is exactly 30% larger.

For the purposes of this study it was important to have surprise between management's forecast and participants' prior expectations. There is no correct amount of surprise. All of the participants in the main study got the same percentage of surprise. The difference between treatments was examined using a percentage calculation of change.

3.6.2 Pilot Study Two

The second pilot study was conducted to examine the power of the tone manipulations on participants' ratings of management's intention factor of credibility. As previously discussed, there are two separate tone manipulations in the study, each at two levels. One of the tone manipulations occurs in management's statement about the company's internal controls, as mandated by the PCAOB Standard No. 2. The second tone manipulation occurs in a letter from management discussing the disappointing results from the prior year (period one).

Twenty-one students were given management's internal control letter and a letter from management stating the prior year's financial results. They were also given the six questions from the credibility scale measuring perceived intention (Appendix B, step 13b). There were two versions of each letter, one with a high intention tone and one with no intention tone. Each student received only a single instance of each letter. For example, a single student could have received an internal control letter with the high intention tone and a financial

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results letter with the no intention tone. There were four possible groups and the order in which students were assigned to each group was random.[9]

For the internal control letter credibility ratings a MANOVA was conducted using the six credibility rating questions as the dependent variables and the tone manipulation as the independent variable. An overall MANOVA F-test indicated a significant difference in the rating of management's credibility between participants in the high intention tone and no intention tone groups (F=3.73; two-tailed p= .020). Not all six of the questions measuring perceived intention were significant. A breakdown of the individual ANOVA results for each question is presented in Panel A of Table 5. The two items measuring perceived intentions that were not statistically significant were self-centered and understanding.

For the earnings results letter credibility ratings a MANOVA was conducted using the six credibility rating questions as the dependent variables and the tone manipulation as the independent variable. An overall MANOVA F-test indicated no significant difference in the ratings of management's credibility between participants in the high intention and no intention tone groups (F=.84; two-tailed p=.556). All six items were insignificant when analyzed using ANOVAs. The results are presented in Panel B of Table 5.

The overall results of the second pilot study indicated that the right wording in a letter from management could influence participants' perceptions and ratings of management's credibility. With respect to the earnings letter, the manipulation

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[9] The order the letters were presented was not random because the order of these letters cannot be randomized in the main study. All participants receive the internal control letter before receiving the financial results letter.

was not sufficiently strong, or was not important to participants, as there was no statistically significant difference between the two groups. Before the main pilot study was conducted, the wording of the earnings letter was revised. Both the high intention tone and no intention tone earnings letters were lengthened[10].

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[10] Ph.D. students were asked to analyze the letters used in pilot study two and to make recommendations for increasing the impact of the letters.

Table 5: Comparison of Statistics for Management's Internal Control Letter and Earnings Letter

Panel A: MANOVA Results of the Management Internal Control Letter on Six Intention Questions (Wilks' Lambda 0.384; MANOVA F=3.73; p=.020)

		High Intention Treatment	No Intention Treatment		
Upper Bound (1)	Lower Bound (11)	Mean (standard deviation)	Mean (standard deviation)	F Stat	P-value
Cares about me	Doesn't care about me	4.818 (1.078)	3.600 (1.429)	4.92	0.039
Has my interest at heart	Does not have my interest at heart.	4.727 (0.904)	3.400 (1.712)	5.07	0.036
Not self-centered	Self-centered	4.545 (1.128)	3.800 (1.229)	2.10	0.163
Concerned with me	Unconcerned with me	5.272 (0.646)	3.700 (1.337)	12.14	0.003
Sensitive	Insensitive	5.181 (0.603)	4.400 (1.699)	7.57	0.013
Understanding	Not Understanding	5.181 (0.751)	4.800 (0.788)	1.29	0.270

Panel B: MANOVA Results of the Earnings Results Letter on Six Intention Questions (Wilks' Lambda 0.734; MANOVA F=.84; p=.556)

		High Intention Treatment	No Intention Treatment		
Upper Bound (1)	Lower Bound (11)	Mean (standard deviation)	Mean (standard deviation)	F Stat	P-value
Cares about me	Doesn't care about me	4.181 (1.887)	3.900 (1.524)	0.14	0.713
Has my interest at heart	Does not have my interest at heart.	4.272 (1.272)	4.000 (1.633)	0.18	0.673
Not self-centered	Self-centered	4.363 (1.362)	4.400 (1.712)	0.00	0.957
Concerned with me	Unconcerned with me	4.727 (1.737)	4.000 (1.764)	0.09	0.354
Sensitive	Insensitive	4.454 (1.293)	4.400 (1.265)	0.01	0.923
Understanding	Not Understanding	4.818 (1.28)	4.300 (1.159)	0.90	0.355

* All questions begin with the phrase "I believe that management of MBMC, Inc. …"

3.6.3 Main Pilot Study

A third pilot study was conducted to test the overall effectiveness of the research instrument and to test the main effects of the treatments on the dependent variables. Student participants enrolled in the study online and completed the task at their own pace via the Internet. Originally, 33 usable responses were tested.[11] Participants were solicited from two accounting classes. One of the classes had participated in the second pilot study. Participants from this class previously read the letters. There is a possibility that the students in this class did not re-read the letters, as they may have believed they already knew what the letters said. Their responses were a potential threat to the internal validity of the study. Data for participants who had previously participated in the second pilot study were removed and 19 overall responses were used to analyze the pilot data. Students who were retained in the study were senior level accounting students enrolled in an Auditing II course.

In the main pilot study, participants were asked to pretend they were members of an investment club. They were given background information about a fictitious company. Included in this information was the internal control letter (manipulated at two levels: high intention tone and no intention tone) and financial data for the last three years, including the earnings per share information. Participants were asked to estimate earnings per share for the coming year (period one). Participants were then given management's earnings per share estimate for the same period (set at 132 percent of the participant's

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[11] Two responses were eliminated because of missing or incomplete information. Several students lost connection of the host Web site but re-started the instrument and completed it in full.

initial prediction) and then were given an opportunity to alter their original estimate. After completing the earnings per share estimate, participants completed the credibility scale.

In the second part of the main pilot study, participants were notified of the actual earnings per share for period one. Notification came in the form of a letter from management that was also manipulated at two levels (high intention and no intention). Participants were notified that management had failed to meet its forecast. The amount of difference between actual earnings per share in period one and management's prediction was held as a constant percentage of management's prediction (equivalently stated as 109 percent of the participants' original estimate or approximately 17.4 percent less than management's initial estimate). Thus, although the absolute dollar amount of difference between management's forecast and the actual results varied between participants, the percentage difference remained constant.

Participants were again presented with the financial statements, including the most recent year's performance. They were asked to estimate earnings per share. Participants were given management's prediction of earnings per share for the year (period two) (132 percent of their estimate) and given the opportunity to revise their forecast. Participants then completed the credibility instrument as well as manipulation check questions and demographic questions. Appendix B contains screen shots of the experiment as it was presented to the participants.

3.6.3.1   Main Pilot Study Data Analysis

The data collected in the pilot study were analyzed to determine if the treatments (the letters) had an effect on participants' judgments. The main study is based on four hypotheses. Recall that H1 and H2 predict that users who are given communications from management with the high intention tone will rate management's credibility higher and have more reliance on management's forecasts. In period two, H3 and H4 predict that communications from management with the high intention tone can mitigate other losses of credibility. In the main study this was measured as the difference in credibility ratings from period one to period two and as the difference in reliance on management forecasts from period one to period two. For the pilot study only participant's ratings of credibility and their adjustment of earnings per share for period two were compared between groups.

The pilot study was designed to test the effect of the treatments; however, due to the small sample size, statistically significant results were not expected in all treatments. Instead the strength and direction of the difference in means between treatments was analyzed. The main effects results from the pilot study are presented in Table 6 and Table 7.

Only the six questions that measure the intention factor of credibility were analyzed for both letters. While overall management credibility is important, the model already lacks statistical power, adding twelve more questions/variables to test the impact of the letters on the expertise and trustworthy variables would

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lower the statistical power of the analysis.[12] Also, the intention factor of credibility

is the primary factor that is manipulated in the study; whereas, the expertise and

trustworthy factors are not manipulated.

3.6.3.2   The Effects of the Internal Control Letter Manipulation

For the first year's ratings and predictions, the overall model was tested

using the tone of the internal control letter participants received as the

independent variable, the six intention factor of credibility questions and the

percentage change in earnings per share estimates as the dependent variables.

The model was significant (F=5.31, two-tailed p= .008) as seen on Table 6 Panel

A.

As Table 6 Panel B shows, three of the intention questions are statistically

significant (cares about me [F=4.25, one-tailed p= .027], concerned with me

[F=4.42, one-tailed p= .025]), and has my interest at heart [F=2.51, one-tailed p=

.066]. The other three questions were found to be insignificant (not self centered

[F=.300, one-tailed p= .294], sensitive [F=.12, one-tailed p= .368], and

understanding [F=.01, one-tailed p= .454]). Interestingly, the three insignificant

variables were the only three questions on the instrument that were reverse

coded. It is possible that participants failed to read the questions carefully.

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[12] Overall credibility is composed of the three major factors of credibility (intention, expertise, and trustworthiness) as measured by the 18 questions on the credibility scale. Each major factor is measured by 6 of the 18 questions.

Table 6: Main Pilot Study Results for Sarbanes-Oxley Internal Control Letter

Panel A: Overall Significance of Sarbanes Oxley Internal Control Letter: Wilks' Lambda =.234, F= 5.31, p=.008

Panel B: Impact of Sarbanes Oxley Internal Control Letter on Intention Factor of Credibility Ratings					
Question Description*		**High Intention Tone (N=10) Mean (standard deviation)**	**No Intention Tone (N=9) Mean (standard deviation)**		
More Credibility (1)	**Less Credibility (11)**			**F Statistic**	**P-value***
Cares about me	Doesn't care about me	5.200 (1.398)	6.777 (1.92)	4.25	.027
Has my interest at heart	Does not have my interest at heart.	5.500 (2.461)	7.111 (1.922)	2.51	.066
Not self-centered	Self-centered	6.900 (2.182)	6.333 (2.291)	.30	.294
Concerned with me	Unconcerned with me	5.500 (1.841)	7.222 (1.716)	4.42	.025
Sensitive	Insensitive	5.400 (1.646)	5.666 (1.732)	.12	.368
Understanding	Not Understanding	5.100 (1.449)	5.000 (2.179)	.01	.454

Panel C: Impact of Sarbanes Oxley Internal Control Letter on Percentage Change in Calculation					
		High Intention Tone (N=10)	**No Intention Tone (N=9)**		
Variable		**Mean (Standard Deviation)**	**Mean (Standard Deviation)**	**F Statistic**	**P-value ***
Y1PERDIF**		.550 (.443)	.287 (.320)	2.22	.077

*All questions begin with the phrase "I believe that management of MBMC, Inc"
** Y1PERDIF: Measures the percentage change in adjustment toward management's forecast.
*** Two tailed p-values

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The reliance on management's forecast was calculated as demonstrated in Table 2 and was compared between the two treatment groups. Table 6 Panel C, shows that participants in the high intention condition relied more on management's estimates. The mean percentage adjustment for participants in the high intention condition was .550 compared to .287 for participants in the no intention condition. The percentage of difference between means was statistically significant (F=2.22, two-tailed p= .077) and in the direction expected.

3.6.3.3 The Effect of the Earnings Letter Manipulation

The second part of the pilot study sought to lower management's credibility by having management fail to meet the forecast from period one. The study sought to determine whether a high intention tone letter from management to shareholders could mitigate the loss of credibility as measured by the difference in credibility ratings and by the difference in participants' reliance on management's forecast. All participants were given a forecast from management in period one that was inaccurate. In this part of the study, the number of possible treatments has now doubled and the power of the statistical tests is further reduced. Approximately 3-6 participants were in each treatment cell. Table 7 presents the results of the earnings letter manipulation.

Table 7: The Results of the Main Pilot Study for the Earnings Results Letter

Panel A: Overall Significance of Earnings Results Letter: Wilks' Lambda =.791, F= .053, p=.772

Panel B: Impact of Earnings Results Letter on Intention Factor of Credibility Ratings

Question Description*		High Intention Tone (N=10) Mean (standard deviation)	No Intention Tone (N=9) Mean (standard deviation)	F Statistic	P-value
More Credibility (1)	**Less Credibility (11)**				
Cares about me	Doesn't care about me	6.375 (1.767)	6.182 (1.834)	.05	.821
Has my interest at heart	Does not have my interest at heart.	6.000 (2.000)	6.818 (2.088)	.74	.403
Not self-centered	Self-centered	6.750 (2.251)	6.364 (2.292)	.13	.719
Concerned with me	Unconcerned with me	6.000 (2.449)	6.272 (1.794)	.08	.782
Sensitive	Insensitive	5.875 (1.642)	5.364 (2.292)	.29	.598
Understanding	Not Understanding	5.500 (1.069)	5.273 (2.240)	.07	.795

Panel C: Impact of Earnings Results Letter on Percentage Change in Calculation

Variable		High Intention Tone (N=10) Mean (Standard Deviation)	No Intention Tone (N=9) Mean (Standard Deviation)	F Statistic	P-value
Y2PERAJDF**		.260 (.457)	.058 (.188)	1.77	.201

*All questions begin with the phrase "I believe that management of MBMC, Inc"
** Y2PERADJ: Measures the percentage change in adjustment toward management's forecast.

Table 7 Panel A presents the results of a MANOVA test on the earnings letter manipulation. There was no overall significance found (F=.053, two-tailed p=.772) when the main effect of the earnings letter treatment was tested against the six intention factors of credibility and the adjustment of earnings per share estimates. All six-intention factors of credibility were statistically insignificant (cares about me [F=.05, two-tailed p= .821], has my interest at heart [F=.74, two-tailed p= .403], not self centered [F=.13, two-tailed p= .719], concerned with me F=.08, two-tailed p= .782], sensitive [F=.29, two-tailed p= .598], and understanding [F=.07, two-tailed p= .795]).

Table 7 Panel C presents the results of testing the impact of the earnings letter on the participants' adjustment of earnings per share. This was also insignificant (F=1.77, two-tailed p= .201); however, the means were in the predicted direction, suggesting that participants in the high intention treatment revised their earnings per share closer to management's predictions. As shown in Table 7 Panel C, the mean adjustment, stated as a percentage between participants' initial prediction and management's prediction, was 26 percent for the high intention treatment and 5.8 percent for the no intention treatment.

3.6.3.4   Comparison of Earnings Per Share Adjustments Between Groups

To compare the degree to which perceived credibility decreased between period one and period two the difference in intention ratings and adjustments of earnings per share were compared between treatment groups. In making the comparison, two new dependent variables were calculated and analyzed from the collected data. These variables measure the difference of adjustment in

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earnings per share estimates in period one and period two and the difference in the intention factor of credibility ratings in period one and period two.

The first new variable is the difference between the average intention ratings from period one and the average intention ratings from period two. The six questions measuring the intention factor of credibility were summed and averaged for each period. Period two average ratings were then subtracted from the period one average ratings. For this variable, lower values indicate the intention factor of credibility dropped more in period two (less credibility). Panel A of Table 8 shows the mean ratings for period one and period two and the difference between them. As indicated in Panel A, participants who received the high intention earnings letter lowered management's credibility more (-1.88) than participants who received the no intention financial results letter (-.045).

The second new variable measures reliance on management's forecast as the difference between the percentage adjustment in earnings per share for period one and period two. Table 2 demonstrated how this variable is calculated. Panel B of Table 8 compares the mean loss of credibility for the percentage change loss of credibility from period one to period two. Consistent with the predicted findings, participants who received the high intention tone earnings letter perceived less loss of credibility (.213) than participants who received the no intention financial results letter (.332).

Table 8: Reduction in Credibility Between Periods One and Two

Panel A: Decrease in the Intention Factor of Credibility from Period One to Period Two					
		Change in Intention Factor of Credibility by Treatment			
Treatment Condition	N	Mean Period One Rating	Mean Period Two Rating	Mean Loss of Credibility	Standard Deviation
High Intention Letter	8	5.900	6.083	-.188	1.18
No Intention Letter	11	6.000	6.045	-.045	0.98

Panel B: Decrease in Percentage Change of Earnings Per Share Estimates From Period One to Period Two					
		Percentage Change Loss by Treatment			
Treatment Condition	N	Mean Period One % Adjustment	Mean Period Two % Adjustment	Mean Loss of Credibility	Standard Deviation
High Intention Letter	8	.473	.260	.213	.431
No Intention Letter	11	.390	.058	.332	.421

3.6.3.5   Main Pilot Study Conclusions

While the results of the main pilot study do not offer significant statistical relationships, the power of the statistical tests performed was low. Low power increases the possibility of a Type II error. Overall, the results of the pilot study were encouraging in that many of the manipulations seemed to be influencing the dependent variables in the hypothesized direction.

Several other factors could also lead to the non-significant findings of this pilot study. First the position of the credibility instrument in the study may have been too far removed from the letter manipulations in both treatments. In the pilot study, participants read the letter (the treatment) then read the financial statements, made their earnings per share estimates, read management's earnings per share predictions, and then revised their forecasts before

completing the credibility questions. For the main study this instrument was moved up so that participants completed the credibility scale directly after reading the letters.

Another significant factor that may have impacted the results of the pilot study was the way in which the study was administered. Participants were able to participate in the study at their leisure and in the location they selected. Some participants may have had extraneous activities interfering with their attention to the study and its subtle manipulations. The only variable available to give an estimate of effort while taking the study is the time it took participants to complete the study. This is a noisy variable in that someone who takes a long time to complete the study may not have given any more effort to reading and answering the questions than someone who took a short time. People or things around participants could distract them from the study for a few minutes. In an effort to help control these extraneous variables, the main study was conducted in a supervised setting. The participants completed the study in a computer lab with a proctor administering the study.

4.0 Main Study Results

4.1 Introduction

In this chapter, I present the results of the main study. The task used in the study was presented in Chapter 3, Section 3.3. This chapter begins with a discussion of the main study's participants. Next the manipulation checks employed to ascertain the salience of the treatments to the participants are discussed. After discussing the manipulation checks, an analysis of potential covariates is presented. Following analysis of covariates, the hypotheses that were presented in Chapter 2 are statistically tested and analyzed. Using the results of the data analyses, each of the hypotheses is examined and discussed in detail.

4.2 Participants

One hundred and twenty-four graduate level students participated in the study. The participants were recruited from a large southeastern university. The recruitment pool consisted of graduate students enrolled either in a Masters of Business Administration (MBA) program, Masters of Accountancy (M.Acc.) program or post-undergraduate accounting students who were completing a fifth year of course work for professional certification. Forty-five MBA students and

79 accounting students[13] participated in the main study. There were 71 female participants and 53 male participants. The participants had an average of 1.65 years of work experience in the field of accounting.

During the semester, all of the participants were enrolled in an accounting course that required them to either participate in one of several available research projects or write a paper assigned by their instructor. In addition to class credit, participants who enrolled in this study were paid $10.

The participants in this study represented an appropriate pool to test the research hypotheses since graduate business students have been found to be a reasonable proxy for investors (Copeland et al. 1973; Ashton and Kramer 1980; Walters-York and Curatola 1998; ,2000; Libby et al. 2002). Also, this study focused on the judgment of investors and relied only on general cognitive abilities. As discussed in Libby et al. (2002), students are a suitable participant pool when general cognitive abilities are required. This study only looks at the relative differences between participants' responses by treatment group.

4.3 Manipulation Checks

Several manipulation check questions were included in the study to determine if the participants perceived the treatments given to them. The manipulation check questions will be discussed below.

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[13] A breakdown between M.Acc. students and the other accounting students was not made as students in the M.Acc. program were also enrolled in the fifth year accounting course.

4.3.1 Intention Manipulation

No manipulation check was analyzed with respect to the intention manipulation. As discussed below, there were questions included in the study that attempted to test if participant's perceived the intention of the communications that they were given.

Written communication was used to deliver the credibility treatment between the groups in period one and period two. In period one, participants received the statement of internal controls from management with either the high intention tone or the no intention tone treatment. In period two, participants received the letter from management informing them of the actual results for period one, again with either a high intention tone or no intention tone treatment.

The intention factor of credibility is composed of three sub-factors: understanding, empathy, and responsiveness. An attempt was made to determine if the participants perceived the letters as understanding, empathetic, and responsive. For each period, participants answered three questions rating management on the three sub-factors of the intention factor of credibility. The manipulation check questions can be seen in Appendix B, item 19.

The six manipulation check questions (three per period) dealing with the three factors of credibility were not analyzed for this study. It was decided post hoc that the credibility scale would be a better determinant than the manipulation questions in determining if the participants perceived the letters as credible. The purpose of the manipulation check questions was to test if the participants remembered the treatment to which they were exposed. These manipulation questions asked participants to rate the credibility of the letters they received, but

did not ask about the actual wording of any of the letters. All three of the

manipulation questions were highly correlated with the credibility factors and

seemed to measure the same construct as credibility, which is already measured

by the credibility scale used in this study (Cronbach's = .768). McCroskey and

Tevens' (1999) credibility scale is a validated instrument, while the questions

used as manipulation checks have not been validated. Better manipulation

check questions could have asked the participants questions about the specific

wording in the letters they received such as, "Did management meet with focus

groups of shareholders because there was a directive from the board of

directors?" This type of question would have determined if the participants

actively recalled the specific treatments.

4.3.2 Surprise

Two manipulation questions were given to participants to determine if they

were surprised by the amount of management's forecast. One question was used

for each of management's forecasts. The questions were answered using a

seven-point Likert scale with answers ranging from "Lower than I expected" to

"Much more than I expected." All but two of the participants seemed somewhat

surprised by management's forecast. These participants rated the surprise of

management's period one forecast as less than a four on the seven-point scale.

The period one analysis was conducted with and without these two participants

and no material differences were found in the results. Based on these findings the reported results retain the two participants.

Surprise was tested for the second period forecast in the same manner as for period one. In period two, only one participant rated management's forecast as less than four on the seven-point scale. The analysis was conducted both with and without the three participants who failed the manipulation check (two from period one and one from period two) and there was no impact on the results of the study.

4.3.3 Accuracy

One question was used as a manipulation check to determine whether participants had perceived management's period one forecast as accurate. The question used a seven-point Likert scale and asked participants if management's forecast for period one was accurate (1) to inaccurate (7). Management's forecasts in the study were inaccurate and it was expected that participants would rate management low on the accuracy scale. Six participants rated management's accuracy in its period one forecast below four on the seven-point scale. Three participants answered the accuracy question with a rating of two while three others had a rating of three. The reported results for period one's analyses and period two's analyses were tested without these six responses and no material differences were found.

4.3.4 Manipulation Check Summary

As indicated, it was determined that removing the participants who failed manipulation check questions did not significantly add to the explanatory power of the model. By keeping all of the participant responses a balanced design was achieved, which increased the power of the statistical methods employed in the data analysis.

4.4 Data Analysis

4.4.1 Introduction

This section begins with an explanation of the selection of covariates included in the study. Following the discussion of the covariates, each of the hypotheses will be discussed and statistically tested. Included in the write-up about hypotheses testing is a description of the type of analysis used to test each hypothesis.

4.4.2 Covariates

This study was designed to manipulate and measure management's perceived credibility by altering the tone of a written communication from management. Management's credibility was also manipulated in the study by having management fail to meet a forecast. These manipulations were purposeful and controlled in the experiment. There are, however, other factors that can impact perceptions of management's credibility or the impact that perceptions of management's credibility will have on decision making. While

these factors are important, not all of them can be manipulated and randomized between participants. Some of these factors are unique to each individual in the study. It is important to identify and measure factors that are associated with individual participants that may impact their assessment of management's credibility or the impact that management's credibility has on their decision making. In statistical terms, these factors are called covariates.

Good covariates will help explain some of the variation in the dependent variables without removing any of the power of the model. Generally, good covariates are highly correlated with the dependent variable but not with independent variables. If the covariates are correlated with independent variables they reduce the ability to measure the true impact of the independent variables on the dependent variable. All covariates in this study were selected by first testing a correlated relationship between the covariate and the dependent variable. As the models are developed and tested, these covariates are further scrutinized with regard to their relationship to the dependent variables. In the case of the credibility rating variable, the potential covariates were tested individually against the three sub-factors of the credibility variable. The sub-factors were used to ensure that no potential covariates were omitted at a higher level of analysis since the credibility construct is analyzed by the three sub-factors in the post hoc analysis section.

Three types of possible covariates were measured and tested in this study: demographic, theoretical, and recent events covariates. Covariates were first tested by using a correlation analysis testing each covariate with the

respective dependent variables. An alpha of .10 was used as the significance level in the correlation analysis. Once the covariates with a significant correlation to the dependent variable were identified, a preliminary ANCOVA model was tested using the covariates and the appropriate independent variable. The following sections detail the testing of the different classifications of possible covariates used in this study.

4.4.2.1   Demographic Covariates

Demographic information was captured about each participant. Capturing demographic information allows testing to determine if there were systematic differences between similar groups of people participating in the study. The demographic questions tested as covariates in this study are presented in Table 9 and include gender, accounting experience, and years of work experience. Gender was selected as a possible covariate because prior research has found significant differences between males and females in stock market investing tasks (Barber and Odean 2001). This study makes no directional predictions as to the impact of gender on the task results. Accounting experience and years of work experience were selected as covariates due to the nature of the task. There was a potential for participants with more accounting and work experience to recognize differences between their experience with disclosures from management and those presented within the task in the study.

Table 9: Demographic Covariate Questions

Panel A: Variable Names, Questions and Response Format		
Variable	**Question**	**Response**
Gender	What is your gender?	Male=1/Female=0
Accounting Experience	Have you worked in the field of accounting?	Yes=1/No=0
Years of Experience	In total, how many years have you worked in the field of accounting?	(Numeric Response)

Panel B: Demographic Covariates Descriptive Data			
Variable	**N**	**Mean**	
Gender	124	0.427	
Accounting Experience	124	0.508	
Years of Experience	63	3.253	

Panel C: Covariate Correlations with Dependent Variables Using Pearson Correlation Coefficients (p-values**)								
Variable*	Credibility Rating		Reliance on Management's Forecast		Difference in Credibility Ratings		Difference in Reliance on Management's Forecast	
Gender	-0.177	**(0.050)**	-0.093	(0.307)	0.063	(0.486)	-0.102	(0.258)
Accounting Experience	0.109	(0.227)	-0.014	(0.876)	0.136	(0.132)	0.081	(0.369)
Years of Experience	-0.085	(0.509)	-0.015	(0.904)	-0.028	(0.823)	-0.030	(0.816)
* See Panel A for a description of the variables ** P-Values are two-tailed tests.								

Panel A identifies the demographic questions asked and Panel B provides descriptive data for the demographic covariate questions. Approximately 43 percent of the participants were males (53) and about 57 percent were females (71). Slightly over 50 percent of the participants had previous accounting experience (63), resulting in a mean of about 3.25 years of experience per participant with experience.

As shown in Table 9 Panel C, only the gender variable was found to be significantly correlated (p = .050) with any of the dependent variables. The gender variable was correlated with credibility rating.

4.4.2.2   Theoretical Covariates

There are several factors that are theoretically tied to credibility ratings and the impact credibility plays in decision making. These variables are discussed in detail in Appendix A, but will be briefly reviewed here as they relate to the covariates in the study. The theoretical factors to consider are the participants' level of involvement with the task, the timing in identifying the communicator, the advocated position of the message, and the perception of possible knowledge and reporting biases.

4.4.2.3   Level of Involvement

Based on the theoretical model discussed in Appendix A, a participant's level of involvement with the task should not impact his/her ratings of management's credibility but should have an impact on the reliance on management's forecasts. Participant's level of involvement could be an important factor in the findings of this study so nine questions were asked to determine participants' level of involvement with the study (Table 10, Panel A). Participants who were more involved in the stock market might be more involved in the task.

Panel B and Panel C of Table 10 present the descriptive statistics for the level of involvement questions. As can be seen in Table 10, 54 percent (67) of participants had made investments (PREVIOUSLY INVESTED) in the stock market, while 88 percent (100) plan (PLAN TO INVEST) to invest in the stock market (some of the participants who indicated they had invested in the stock market also plan to invest in the stock market). When asked on a five-point scale if they would pick their own stocks (SELF SELECT STOCKS) rather than have a

broker select them, the group responses indicated that participants would pick

their own stocks with a mean of around 3.68, more than they would rely on a

broker to pick their stocks (BROKER), with a mean around 2.53. Participants

were also asked if they had previously performed a task similar to the one in the

study (TASK EXPERIENCE). Of the 124 participants, most had not performed a

task similar to the one in the study (mean 2.60). Most participants seemed to

enjoy the task (TASK ENJOYMENT) as they rated their mean enjoyment at

about 3.8, which was close to the "agree" end of the response scale. They also

seemed to have some confidence in their earnings per share estimates

(CONFIDENCE) as they rated the confidence question with a mean of about 3.5,

falling just between the "neutral" and "agree" points on the response scale.

Panel D of Table 10 presents the correlations between the level of

involvement questions and the dependent variables. Several of the level of

involvement questions were correlated with the credibility rating variables and

were further tested as covariates. Questions relating to participant's investing

behavior were highly correlated with the credibility rating. The following variables

were significantly correlated with the credibility rating: PREVIOUSLY INVESTED,

SELF SELECT STOCKS, INVESTED IN MUTUAL FUND, TASK ENJOYMENT,

and CONFIDENCE. PREVIOUSLY INVESTED and CONFIDENCE were also

significantly correlated with reliance on management's forecast in period one.

Only INVESTED IN MUTUAL FUND was significantly correlated with the

difference in credibility ratings from period one to period two. The difference in

reliance on management's forecasts from period one to period two was

significantly correlated with only one level of involvement question—

PREVIOUSLY INVESTED.

Table 10: Level of Involvement with Task Questions

Panel A: Variable Names, Questions and Response Format		
Variable	**Question**	**Response**
PREVIOUSLY INVESTED	Have you ever made an investment in the stock market?	Y=1/N=0
PLAN TO INVEST	Do you plan to invest in the stock market?	Y=1/N=0
INVESTED IN MUTUAL FUND	Have you ever invested in a mutual fund?	Y=1/N=0
SELF SELECT STOCKS	I pick which stocks I want to purchase.	[SA,A,N,D,SD]
BROKER	I rely on my broker to tell me which stocks to purchase.	[SA,A,N,D,SD]
MUTUAL FUNDS ONLY	I only invest in mutual funds	[SA,A,N,D,SD]
TASK EXPERIENCE	I have previously performed tasks similar to the one in this study.	[SA,A,N,D,SD]
TASK ENJOYMENT	I enjoyed working on the task in this study.	[SA,A,N,D,SD]
CONFIDENCE	I am confident in my earnings per share predictions.	[SA,A,N,D,SD]
Key: [SA,A,N,D,SD] = Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1)		

Panel B: Covariate Descriptive Data for Dichotomous Variables			
Variable	**N**	**Mean**	
Previously Invested	124	0.540	
Plan to Invest	124	0.880	
INVESTED IN MUTUAL FUND	124	0.557	

Panel C: Covariate Descriptive Data for Ordinal Variables					
Variable	**N**	**Mean***	**Standard Deviation**	**Minimum**	**Maximum**
SELF SELECT STOCKS	124	3.685	1.054	1	5
BROKER	124	2.532	1.070	1	5
TASK EXPERIENCE	124	2.604	1.254	1	5
TASK ENJOYMENT	124	3.823	0.744	2	5
CONFIDENCE	124	3.508	0.791	1	5
* See Panel A for scale values for each variable.					

Table 10: Level of Involvement with Task Questions (Continued)

Panel D: Pearson Correlation Coefficients for Covariates and Dependent Variables (p-values**)								
Variable*	Credibility Rating		Reliance on Management's Forecast		Difference in Credibility Ratings		Difference in Reliance on Management's Forecast	
Previously Invested	-0.187	(**0.037**)	0.165	**(0.068)**	0.038	(0.676)	0.190	**(0.035)**
Plan to Invest	0.025	(0.786)	-0.009	(0.923)	0.070	(0.435)	0.112	(0.214)
INVESTED IN MUTUAL FUND	-0.212	(**0.018**)	0.116	(0.199)	-0.268	(**0.003**)	0.119	(0.190)
SELF SELECT STOCKS	-0.173	(**0.055**)	-0.003	(0.974)	0.015	(0.866)	-0.013	(0.888)
BROKER	0.056	(0.538)	-0.007	(0.937)	0.003	(0.971)	0.093	(0.306)
MUTUAL FUNDS ONLY	0.127	(0.159)	-0.004	(0.966)	0.048	(0.595)	-0.118	(0.191)
TASK EXPERIENCE	-0.143	(0.114)	0.003	(0.978)	-0.007	(0.936)	-0.039	(0.671)
TASK ENJOYMENT	0.221	(**0.014**)	-0.117	(0.195)	0.032	(0.718)	-0.031	(0.731)
CONFIDENCE	0.165	(**0.067**)	-0.154	**(0.089)**	0.029	(0.745)	-0.075	(0.408)

* See Panel A for a description of the variables
** P-Values are two-tailed tests.

4.4.2.4 Timing in Identifying the Communicator Covariate

The model in Appendix A reveals that for people receiving a message, timing in identifying who a communicator is can impact the role of credibility in decision making. Timing in this sense refers to when a person is notified of the sender of a message, which can either be before or after the message has been given. In this study, all recipients were given communications from management and all recipients were told the communication was from management. Two questions were given to participants to test if they were aware that management was responsible for the communications in this study. Consistent with the theory, since all participants were told the identity of their communicators before

receiving the message, the responses to this question were uncorrelated with any of the dependent variables.

4.4.2.5   The Advocated Position of the Message

Another factor discussed in Appendix A is the position of the message. Communicators can either give a message that is in the same direction as their audiences' beliefs or in an opposite direction. The participant's initial forecast of earnings per share was used to compare the position of the message given by management to the participants' beliefs about future earnings. Participants who forecasted positive earnings per share (n= 114) over the prior period were tested against those who forecasted negative earnings per share (n= 10) using a bi-variate dummy variable. Since almost all (92 percent) of the participants forecasted positive earnings per share over the initial prior period the results of the comparison were insignificant.

4.4.2.6   Knowledge Bias and Reporting Bias

The message delivered by any communicator will interact with the message recipient's expectations of the message. Knowledge bias and reporting bias refer to two such interactions that have been found in prior literature (Eagly and Wood, 1978). While these two topics are covered in detail in Appendix A, a brief review will be given here to clarify how these interactions were tested. It is also important to note that testing for these effects occurred near the end of the study after the treatments were given; therefore, the questions had no impact on the main treatments, thus eliminating the possibility of confounding the results of

the main experiment with the manipulation check questions. Unfortunately, asking the questions at the end of the study limited the scope of the questions.

A knowledge bias would occur if the message recipient believed the communicator's background or education would pre-dispose the communicator to advocating only one side or perspective of an issue. It would be confirmed if the message delivered by the communicator was consistent with the recipient's pre-message expectations. A confirmed knowledge bias can reduce credibility via the expertise factor of credibility while a disconfirmed knowledge bias can increase perceived credibility via the expertise factor of credibility. For example, more weight is given to a politician who gives an opinion opposite that of his political party's message. The message recipients are expecting the politician to take a position in line with the politician's party. If the politician takes the expected position, he/she can lose credibility with the message recipients (unless the message takes the same position held by the recipient, then credibility means less to the decision).

A reporting bias is also an expectation from the message recipient. The expectation is formed based on the intended audience of the communication. That is, a recipient believes the communicator will alter the message to conform to the beliefs of the intended audience. When a reporting bias is confirmed, the trustworthiness factor of credibility is reduced. When a reporting bias is disconfirmed, the trustworthiness factor of credibility is enhanced.

Three questions were used to determine if reporting or knowledge biases were present in the study. The three questions used to test for reporting and

knowledge biases do not allow differentiation between which bias may be present. This study was not designed to test the impact of these biases; the check is being used to test a possible covariate that may help remove some of the effects of these biases, thus isolating the impact on the main treatments.

Table 11, Panel A presents the three questions used to test the knowledge bias and reporting bias in the study. It was important to determine the expectations of the participants with regard to what management reports. The first question asked if participants expected management to correctly report its earnings estimates while the other two questions both tried to determine if participants expected management to inflate its earnings estimates and if they expected those estimates to be positively inflated.

The descriptive data for the reporting and knowledge bias questions are presented in Panel B of Table 11. Regarding their expectations about management reporting earnings correctly, participants were somewhat neutral in their response with a mean score slightly less than 3.26. They did, however, have a higher mean (about 3.53) with respect to the belief that management would inflate its earnings predictions. At an even higher level of agreement, (approximately 4.22) participants indicated that management would predict positive earnings.

Panel C of Table 11 presents the correlation data between the reporting and knowledge bias questions and the dependent variables. The question asking participants if they expected management to inflate its earnings estimates (EXPECT MANAGEMENT TO INFLATE EPS) was the only variable that was

correlated with any of the dependent variables. This variable was correlated with

both reliance on management's forecast (H2), and the difference in reliance on

management's forecasts (H4) from period one to period two.

Table 11: Reporting Bias and Knowledge Bias Questions

Panel A: Variable Names, Questions and Response Format		
TRUST MANAGEMENT	Managers in public companies are most likely to report earnings estimates correctly.	[VL,L,N,U,VU]
EXPECT MANAGEMENT TO INFLATE EPS	I expected management to inflate their earnings predictions.	[SA,A,N,D,SD]
EXPECT POSITIVE EARNINGS ANNOUNCEMENTS	I expected management to predict positive earnings.	[SA,A,N,D,SD]
Key:		
[SA,A,N,D,SD] = Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1)		
[VL,L,N,U,VU] = Very Likely (5), Likely (4), Neutral (3), Unlikely (2), Very Unlikely (1)		

Panel B: Covariate Descriptive Data					
Variable	N	Mean*	Standard Deviation	Minimum	Maximum
TRUST MANAGEMENT	124	3.258	0.927	1	5
EXPECT MANAGEMENT TO INFLATE EPS	124	3.532	1.199	1	5
EXPECT POSITIVE EARNINGS ANNOUNCEMENTS	124	4.218	0.704	2	5
* See Panel A for scale values for each variable.					

Panel C: Covariate Correlations with Dependent Variables Using Pearson Correlation Coefficients (p-values)							
Variable*	Credibility Rating		Reliance on Management's Forecast		Difference in Credibility Ratings		Difference in Reliance on Management's Forecast
TRUST MANAGEMENT	0.130	(0.149)	-0.020	(0.822)	0.067	(0.461)	-0.033	(0.714)
EXPECT MANAGEMENT TO INFLATE EPS	-0.127	(0.159)	-0.282	**(0.002)**	-.034	(0.706)	-0.220	**(0.014)**
EXPECT POSITIVE EARNINGS ANNOUNCEMENTS	0.109	(0.230)	-0.146	(0.105)	0.035	(0.702)	-0.002	(0.984)
* See panel A for a description of the variables.							
** P-Values are two-tailed tests.							

4.4.2.7   Recent Event Covariates

The final group of variables tested as covariates related to recent events that had occurred in the financial markets and the reaction of lawmakers to those events (Sarbanes-Oxley). The exposure of participants to high profile financial frauds such as Enron and WorldCom could impact participant responses.

Twelve questions were used to develop an understanding of each participant's exposure to and understanding of the recent events regarding management fraud and the government reaction to those recent frauds (i.e., the Sarbanes-Oxley Act of 2002). The recent event questions are presented in Table 12, Panel A. Eight of the 12 questions deal with fraud and four questions deal with participant's knowledge of and beliefs about the Sarbanes-Oxley Act.

Table 12, Panel B and Panel C presents descriptive data regarding the recent event questions. Participants were asked if they believed management fraud was prevalent (FRAUD IS PREVALENT), and their responses seem to indicate a bit of indecision with respect to the issue. Just over half of the participants about .51 responded that they believed management fraud is prevalent. Seemingly in agreement, when participants were asked if they would rely on a forecast from management (TRUST MANAGEMENT FORECAST) the mean response was a neutral 3 on a scale of 1 to 5. Participants were then asked if they would rely on a forecast from management if an independent auditor provided assurance on those forecasts (AUDIT ASSURANCE OF FORECASTS). The results were a bit more positive for the effect of auditor assurance, as the mean response to the auditor question was around 3.55.

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Of the 124 participants, 5.6 percent (7) indicated they had been defrauded as a shareholder of a public company (PERSONAL FRAUD HISTORY), but 22.6 percent (28) of participants knew someone who had been defrauded (ACQUAINTANCE FRAUD HISTORY) and 79.8 percent (99) had heard of someone being defrauded by a public company (HEARD ABOUT FRAUD). Surprisingly, 1.6 percent (2) of the participants responded that they have committed fraud in a public company (FRAUDSTER)[14].

With respect to the Sarbanes-Oxley Act recent event questions the participants were asked if they had studied the Sarbanes-Oxley Act (STUDIED SOX). They responded with a mean score around 4.45 indicating somewhere between "agree" and "strongly agree" that they had studied the Sarbanes-Oxley Act. The participants also felt that the Sarbanes-Oxley Act (FRAUD SOX RELATIONSHIP) was between "relevant" and "very relevant" with respect to fraud (mean about 4.37). The last two questions asked participants if they were familiar with the Public Company Accounting Oversight Board (PCAOB FAMILIARITY) and if they were familiar with Auditing Standard No. 2 as issued by the PCAOB (ASNO2 FAMILIARITY). The results for these two questions were somewhat consistent as participants were close to "agree" that they knew about the PCAOB (mean about 3.82), and they were between "neutral" and "agree" on the question regarding their familiarity with the Auditing Standard No. 2 promulgation, with a mean rating of 3.54.

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[14] Both of these participant's responses to other questions were checked to determine if they were not taking the study seriously. Based on the time they spent on questions before and after this question it did appear the participants at least took a reasonable amount of time to answer these questions.

Panel D of Table 12 presents the correlations between the recent events covariates and the dependent variables. The recent event covariates could be split into two sections, recent events regarding management fraud and the events that transpired in reaction to those events (e.g., the passage of the Sarbanes Oxley Act). Only one of the questions associated with management and fraud was significantly correlated with any of the dependent variables, while all four of the Sarbanes-Oxley questions were correlated with at least one of the dependent variables. The fraud question that asked if the participant had been defrauded as a shareholder of a public company was significantly correlated with the credibility rating. For the Sarbanes-Oxley questions, the question asking participants if they had studied the Sarbanes-Oxley Act in their accounting courses was correlated with the difference in management's credibility ratings from period one to period two. The question asking the importance of the Sarbanes-Oxley Act was significantly correlated with the credibility rating and the reliance on management's forecast. The questions asking students about their familiarity with Auditing Standard No. 2 and the PCAOB were also significantly correlated with the credibility rating variable.

Table 12: Recent Event Questions

Panel A: Variable Names, Questions and Response Format		
Variable	**Question**	**Response**
FRAUD IS PREVALENT	Do you believe management fraud is prevalent?	Y=1/N=0
PERSONAL FRAUD HISTORY	Have you ever been defrauded as a shareholder of a public company?	Y=1/N=0
ACQUAINTANCE FRAUD HISTORY	Do you know of someone who has been defrauded by a public company?	Y=1/N=0
HEARD ABOUT FRAUD	Have you ever heard of someone who was defrauded by a public company?	Y=1/N=0
FRAUDSTER	Have you ever committed fraud as a member of management?	Y=1/N=0
TRUST MANAGEMENT FORECASTS	I trust management in providing me with foreword looking forecasts.	[SA,A,N,D,SD]
AUDIT ASSURANCE OF FORECAST	I would rely on management's forward looking forecasts if an independent auditor provided assurance on management's assertions.	[SA,A,N,D,SD]
STUDIED SOX	I have studied Sarbanes-Oxley in my accounting courses.	[SA,A,N,D,SD]
FRAUD SOX RELATIONSHIP	With regard to fraud, I believe Sarbanes-Oxley is:	[VR,R,N,I,VI]
ASNO2 FAMILIARITY	I am familiar with the requirements of PCAOB Auditing Standard No. 2, "An Audit of Internal Control over Financial Reporting Performed in Conjunction with an Audit of Financial Statements."	[SA,A,N,D,SD]
PCAOB FAMILIARITY	I know what the PCAOB is.	[SA,A,N,D,SD]
Key: [SA,A,N,D,SD] = Strongly Agree (5), Agree (4),Neutral (3), Disagree (2), Strongly Disagree (1) [VR,R,N,I,VI] =Very Relevant (5), Relevant (4),Neutral (3), Irrelevant (2), Very Irrelevant (1)		

Table 12: Recent Event Questions (Continued)

Panel B: Recent Event Covariates Descriptive Data for Dichotomous Covariate Variables					
Variable	**N**	**Mean**	**Standard Deviation**		
FRAUD IS PREVALENT	124	0.508	0.502		
PERSONAL FRAUD HISTORY	124	0.056	0.232		
ACQUAINTANCE FRAUD HISTORY	124	0.226	0.420		
HEARD ABOUT FRAUD	124	0.798	0.403		
FRAUDSTER	124	0.016	0.126		
Panel C: Recent Event Covariates Descriptive Data for Ordinal Covariate Variables					
Variable	**N**	**Mean**	**Standard Deviation**	**Min**	**Max**
TRUST MANAGEMENT FORECASTS	124	3.000	0.855	1	4
AUDIT ASSURANCE OF FORECAST	124	3.548	0.868	2	5
STUDIED SOX	124	4.452	0.780	1	5
FRAUD SOX RELATIONSHIP	124	4.371	0.643	2	5
ASNO2 FAMILIARITY	124	3.540	1.340	1	5
PCAOB FAMILIARITY	124	3.823	1.437	1	5
* See Panel A for scale values for each variable.					

Table 12: Recent Event Questions (Continued)

Panel D: Covariate Correlations with Dependent Variables Using Pearson Correlation Coefficients (p-values**)								
Variable*	**Credibility Rating**		**Reliance on Management's Forecast**		**Difference in Credibility Ratings**		**Difference in Reliance on Management's Forecast**	
FRAUD IS PREVALENT	0.048	(0.598)	0.014	(0.879)	0.099	(0.274)	0.018	(0.846)
PERSONAL FRAUD HISTORY	-0.187	**(0.038)**	0.051	(0.575)	-0.054	(0.549)	0.055	(0.546)
ACQUAINTANCE FRAUD HISTORY	0.016	(0.860)	0.069	(0.449)	0.040	(0.657)	0.112	(0.215)
HEARD ABOUT FRAUD	-0.072	(0.424)	-0.010	(0.910)	0.045	(0.616)	0.043	(0.636)
FRAUDSTER	0.026	(0.774)	-0.122	(0.179)	0.093	(0.300)	-0.117	(0.198)
TRUST MANAGEMENT FORECASTS	0.007	(0.939)	0.115	(0.204)	-0.144	(0.109)	0.106	(0.243)
AUDIT ASSURANCE OF FORECAST	0.138	(0.128)	-0.041	(0.651)	-0.052	(0.566)	-0.004	(0.968)
STUDIED SOX	0.129	(0.152)	-0.044	(0.627)	-0.186	**(0.038)**	-0.051	(0.575)
FRAUD SOX RELATIONSHIP	0.260	**(0.004)**	-0.159	**(0.078)**	0.024	(0.791)	-0.048	(0.597)
ASNO2 FAMILIARITY	0.283	**(0.001)**	0.075	(0.406)	0.042	(0.643)	0.101	(0.267)
PCAOB FAMILIARITY	0.200	**(0.026)**	0.033	(0.715)	-0.003	(0.970)	0.101	(0.264)
* All participants had read about a fraud being committed. ** P-Values are two-tailed tests.								

4.4.2.8 Summary of Covariate Findings

The results of the covariate testing found several variables correlated with the dependent variables in this study. This section contains a brief discussion of the covariates included in the model used to test the hypotheses. The discussion relates each covariate to the dependent variables with which they were correlated.

4.4.2.8.1   Covariates Correlated with Credibility Rating (H1)

The covariates that were correlated with the credibility rating (H1) were determined by testing each potential covariate's correlation with the credibility rating from period one of the study. Table 13 summarizes the correlated covariates with credibility rating by type of covariate.

Table 13: Covariates Correlated with Credibility Rating (H1)

Variable*	Correlation	P-Value**	Type of Covariate	Reference Table
Gender	-0.177	0.050	Demographic	Table 9
PREVIOUSLY INVESTED	-0.187	0.037	Level of Involvement	Table 10
SELF SELECT STOCKS	-0.173	0.055	Level of Involvement	Table 10
INVESTED IN MUTUAL FUND	-0.212	0.018	Level of Involvement	Table 10
TASK ENJOYMENT	0.221	0.014	Level of Involvement	Table 10
CONFIDENCE	0.165	0.067	Level of Involvement	Table 10
PERSONAL FRAUD HISTORY	-0.187	0.038	Recent Events	Table 12
FRAUD SOX RELATIONSHIP	0.260	0.004	Recent Events	Table 12
PCAOB FAMILIARITY	0.200	0.026	Recent Events	Table 12
ASNO2 FAMILIARITY	0.283	0.001	Recent Events	Table 12
** P-Values are two-tailed tests.				

Once the significantly correlated variables were identified they were further tested for inclusion in the final model by running a preliminary ANCOVA analysis. This analysis included the independent variable tone of management letter (Internal Control Letter) used to test H1 as well as all of the identified covariates. Using an alpha of .10, only four of the correlated variables were significant in the model as presented in Table 14. Participants' prior history with investing in mutual funds (INVESTED IN MUTUAL FUND) (F=3.53, two-tailed p= .063), their confidence in their earnings per share estimates (CONFIDENCE) (F =

5.82, two-tailed p= .018), their familiarity with Sarbanes-Oxley (FRAUD SOX

RELATIONSHIP) (F = 9.47, two-tailed p= .002), and their familiarity with Auditing

Standard No. 2 (ASNO2 FAMILIARITY), (F=2.97, two-tailed p= .087) were

included in the final model used to test H1.

Table 14: Preliminary ANCOVA Testing of Credibility Rating (H1) Using Covariates

Variable*	DF	Sum of Squares	Mean Squares	F Statistic	P-Value**
Internal Control Letter	1	10.755	10.755	7.15	0.009
PERSONAL FRAUD HISTORY	1	1.845	1.845	1.23	0.270
FRAUD SOX RELATIONSHIP	1	14.246	14.246	9.47	**0.002**
PCAOB FAMILIARITY	1	2.177	2.177	1.45	0.231
ASNO2 FAMILIARITY	1	4.472	4.472	2.97	**0.087**
Gender	1	1.327	1.327	0.88	0.350
PREVIOUSLY INVESTED	1	2.981	2.981	1.98	0.162
INVESTED IN MUTUAL FUND	1	5.305	5.305	3.53	**0.063**
SELF SELECT STOCKS	1	3.587	3.587	2.38	0.125
TASK ENJOYMENT	1	1.707	1.707	1.13	0.289
CONFIDENCE	1	8.753	8.753	5.82	**0.018**
Model	11	84.858	7.714	5.13	0.0001
Error	112	168.430	1.503		
Corrected Total	123	253.289			
n = 124					
*See tables 9-12 for variable descriptions ** P-Values are two-tailed tests.					

4.4.2.8.2   Covariates Correlated with Reliance on Management's Forecasts

The four variables correlated with the participants' reliance on

management's forecasts are presented in Table 15. The covariates were further

tested against the reliance on management's forecasts by running a preliminary

ANCOVA analysis. As Table 16 demonstrates, all four of the potential covariates

were significant using an alpha of .10. Consequently, all four covariates are used

in the hypothesis testing.

Table 15: Covariates Correlated with Reliance on Management's Forecast (H2)

Variable*	Correlation	P-Value**	Type of Covariate	Reference Table
PREVIOUSLY INVESTED	0.165	0.068	Level of Involvement	Table 10
CONFIDENCE	-0.154	0.089	Level of Involvement	Table 10
EXPECT MANAGEMENT INFLATE EPS	-0.282	0.002	Reporting and Knowledge Bias	Table 11
FRAUD SOX RELATIONSHIP	-0.159	0.078	Recent Events	Table 12
** P-Values are two-tailed tests.				

Table 16: Preliminary ANCOVA Testing of Reliance on Management's Forecast (H2) Using Covariates

Variable	DF	Sum of Squares	Mean Squares	F Statistic	P-Value**
Internal Control Letter	1	0.031	0.031	4.27	0.041
FRAUD SOX RELATIONSHIP	1	0.046	0.046	6.31	**0.013**
CONFIDENCE	1	0.050	0.050	6.88	**0.010**
PREVIOUSLY INVESTED	1	0.025	0.025	3.39	**0.067**
EXPECT MANAGEMENT INFLATE EPS	1	0.071	0.071	9.71	**0.002**
Model	5	0.214	0.042	5.86	<0.000
Error	118	0.862	0.007		
Corrected Total	123	1.077			
*See tables 9-12 for variable descriptions. ** P-Values are two-tailed tests.					

4.4.2.8.3   Covariate for the Difference in Credibility Ratings

H3 measures the difference in credibility ratings from period one to period

two by examining the difference in participants' ratings of management's

credibility on the McCroskey and Teven (1999) credibility scale. Table 17 shows

that only two of the potential covariates were correlated with the difference in

credibility ratings.

Table 17: Covariates Correlated with the Difference in Credibility Ratings (H3)

Variable*	Correlation	P-Value**	Type of Covariate	Reference Table
INVESTED IN MUTUAL FUND	0.271	0.002	Level of Involvement	Table 10
STUDIED SOX	-0.186	0.039	Recent Events	Table 12
** P-Values are two-tailed tests.				

A preliminary ANCOVA was run using both the independent variable and both of the significantly correlated covariates. The results presented in Table 18 show that both the participants' mutual fund investing experience (F = 9.06, two-tailed p= .032) and their studying of Sarbanes-Oxley (F = 4.17, two-tailed p= .043) were significant (alpha = .10) variables in the model. Thus, both covariates are included in the tests of H3.

Table 18: Preliminary ANCOVA Testing of Difference in Credibility Ratings (H3) Using Covariates

Variable*	DF	Sum of Squares	Mean Squares	F Statistic	P-Value**
FINANCIAL RESULTS LETTER	1	3.866	3.866	2.66	0.105
INVESTED IN MUTUAL FUND	1	13.149	13.149	9.06	0.032
STUDIED SOX	1	6.059	6.059	4.17	0.043
Model	3	24.147	8.049	5.55	0.0013
Error	120	174.160	1.451		
Corrected Total	123	205.486			
*See tables 9-12 for descriptive statistics of the variables					
** P-Values are two-tailed tests.					

4.4.2.8.4   Covariates for the Difference in Reliance on Management's Forecasts (H4)

In this study, the difference in reliance on management forecasts (H4) is measured as the difference between the reliance on management's earnings per

share estimates made in period one and the reliance on management's earnings per share estimates in period two. To control for the residual experimental effects of period one in this study, a variable was created to measure the usefulness of management's prediction in period one[15]. The useful variable was measured as the difference between the participants' final earnings per share prediction in period one and the actual results of earnings per share in period one. High (positive) values of the useful variable indicate that participants' final estimates of earnings per share were above the actual earnings per share for the period. Low (negative) values of the useful variable indicate that the participants' final estimates of earnings per share were below the actual earnings per share for period one. For example if a participant selected $2.00 as his/her initial earnings per share estimate, management would predict earnings per share for the period of $2.64. The surprise in management's prediction is $.64. On average participants in the high intention tone treatment revised their earnings per share estimates about 33 percent of the surprise in management's forecast. So this participant would have adjusted their earnings per share estimate to $2.21 ($2.00 initial prediction plus 33 percent of the $.64 surprise). Actual earnings per share for this participant's example would be 1.09 percent of the initial earnings per share or $2.18 ($2.00 * 1.09). The useful measure for this example would be $.03 as the participant's estimate was $.03 higher than the actual earnings per share. In period two this participant was less likely to rely on management's forecast than someone with a negative useful score. This was seen in correlation testing where the useful variable was highly correlated in a negative

[15] See the discussion in the post hoc analysis section as well as in the studies limitations.

direction with the difference in reliance on management forecasts variable. The

higher the useful variable the less reliance on management's forecast in period

two.

Table 19 below presents the actual useful calculations based on the

period one treatment conditions. As can be seen from the table, participants in

the high intention condition had a mean revised earnings per share estimate of

about $2.21, while participants in the no intention treatment condition had a

mean revised estimate of earnings per share of around $2.11. The mean actual

earnings per share for the high intention group was just over $2.17, while the

actual earnings per share for the no intention group was about $2.15. After

rounding, the usefulness of management's forecast was $.04 for participants in

the high intention treatment while it was $- .04 for participants in the no intention

treatment condition.

Table 19: Calculation of the Useful Covariate by Period One Treatment Condition

Treatment Condition (Period One)	Participants' Period One Revised EPS Estimate Mean (Std. dev.) Min - Max	Period One Actual Earnings Per Share Mean (Std. dev.) Min - Max	Usefulness of Period One EPS Estimate ** Mean (Std. dev.) Min - Max
High Intention	$ 2.206 (.264)	$ 2.173 (.125)	$.037 (2.11)
	$1.550 – $2.870	$1.635 – $2.452	$-.616 – $.185
No Intention	$ 2.113 (.279)	$ 2.148 (.230)	$-.038 (.153)
	$.500 – $2.600	$.545 – $2.398	$-.429 – $.189
* Calculated as Participant's Initial Earnings Per Share * 1. 09			
** Calculated as Actual Period One EPS – Participant's Revised Period One EPS Estimate			

Table 20 presents the descriptive statistics for the useful variable based on the period two treatment conditions. Participants' who received the high intention tone financial statement letter had a positive difference (mean =.026) between their earnings per share estimates in period one and actual earnings per share. The positive difference is indicative of estimating earnings per share above the actual earnings per share for the period. The participants who received the no intention tone financial statement letter had a negative difference (mean = -.024) between their earnings per share estimates in period one and the actual period one results. The negative difference indicates that the participants had underestimated actual earnings per share. This relationship between the usefulness of period one's forecast and the amount of difference in reliance on management's forecasts in period two is further examined in the post hoc analysis.

Table 20: Descriptive Statistics for the Useful Covariate by Year Two Treatment

	High Intention Letter			No Intention Letter		
Covariate	Mean (Standard Dev)	Min	Max	Mean (Standard Dev)	Min	Max
Useful*	0.026 (0.177)	-0.616	0.189	-0.024 (0.195)	-.494	0.190
* The useful variable measured the difference between participants' second earnings per share estimate in period one and the actual period one earnings per share for the company						

As can be seen in Table 21, the new variable, useful, was found to be a
significantly correlated with the difference in reliance on management's forecasts
(H4). In addition to the useful covariate, two other potential covariates were found
to be significantly correlated with the dependent variable at an alpha of .05. The
variable that measured participants' belief that management would inflate its
earnings, along with the question asking if participants planned to invest in the
stock market.

Table 21: Covariates Correlated with the Difference in Reliance on Management Forecasts (H4)

Variable*	Correlation	P-Value**	Type of Covariate	Reference Table
Useful	-0.788	0.000	Control Variable for Period One	Table 19
EXPECT MANAGEMENT INFLATE EPS	-0.220	0.014	Reporting and Knowledge Bias	Table 11
PREVIOUSLY INVESTED	0.190	0.035	Level of Involvement	Table 10
** P-Values are two-tailed tests.				

The results of a preliminary ANCOVA test are presented in Table 22. An
ANCOVA was used to examine the covariates in relationship to the dependent
variable while controlling for the relationship to the independent variable. Only
the useful variable was significant ($F = 177.65$, two-tailed $p < .000$), using an

alpha of .10. The two other potential covariates were insignificant and will not be

included in the final testing of the hypothesis.

Table 22: Preliminary ANCOVA Testing Difference in Reliance on Management Forecasts (H4) Using Covariates

Variable*	DF	Sum of Squares	Mean Squares	F Statistic	P-Value**
Financial Results Letter	1	0.036	0.040	1.3	0.257
Previously Invested	1	0.033	0.032	1.08	0.301
Expect Management Inflate EPS	1	0.004	0.003	0.12	0.733
Useful	1	5.416	5.412	177.65	0.000
Model	4	6.133	1.533	50.29	0.000
Error	119	3.628	0.030		
Corrected Total	123	9.761			
* See tables 9-12 for variable descriptions ** P-Values are two-tailed tests.					

4.4.3 MANCOVA Testing

The dependent variables in this study are examined to determine if they

are correlated. When using multiple dependent variables that are correlated the

MANCOVA model is used to determine the main and interaction effects of the

independent variables to the combined dependent variables. Table 23 presents

the results of the correlation analysis on the dependent variables. There are two

dependent variables for both periods of the study. In period one the dependent

variables are management's credibility rating and the participants' reliance on

management's forecast. As can be seen in Panel A of Table 23, these two

dependent variables are correlated (Pearson -.195, p = .029) indicating that using

a MANCOVA model is appropriate.

In period two there are also two dependent variables. The first dependent

variable is the change in credibility ratings and the second dependent variable is

the change in reliance on management's forecasts. As can be seen in Panel B of

Table 23, these two dependent variables are not correlated, and therefore are not examined using a MANCOVA model.

Table 23: Correlation Between Dependent Variables by Period

Panel A: Correlation Between Period One Dependent Variables		
Variable	**Correlation**	**P-Value**
Credibility Rating (H1) & Reliance on Management's Forecast (H2)	-.195	.029
Panel B: Correlation Between Period Two Dependent Variables		
Variable	**Correlation**	**P-Value**
Difference in Credibility Ratings (H3) & Difference in Reliance on Management's Forecast (H4)	-.014	.873

Table 24 Panel A presents the results of the MANCOVA model examining the significance of the internal control letter on both dependent variables from period one. As the table shows, the F statistic is significant for the internal control letter (Wilks' Lambda .899, F = 6.46, P= .002). Since the intention factor is significant in the MANCOVA it is appropriate to conduct a separate ANCOVA analysis for each dependent variable. Panels B and C of Table 24 present the separate ANCOVA models for each of the dependent variables.

In Panel B of Table 24 the impact of the internal control letter on credibility rating is significant (F = .7.19, two-tailed p = .008). Those covariates that are significant (p=.10) will be retained for the analysis of H1.

As can bee seen in Panel C of Table 24, the impact of the internal control letter on the reliance on management's forecast is also significant (F = 3.19, two-tailed p = .077). Again, those covariates that are significant (P=.10) will be retained for the analysis of H2.

Table 24: Results for Internal Control Letter's Impact on Credibility Ratings and Reliance on Management's Forecast

Panel A: MANCOVA Results for Internal Control Letter on Credibility Ratings & Reliance on Management's Forecast					
Wilks' Lambda .899, F Statistic = 6.46, P = .002					
Panel B: ANCOVA Results for Internal Control Letter on Credibility Rating					
Variable	**DF**	**Sum of Squares**	**Mean Squares**	**F Statistic**	**P-Value***
Internal Control Letter	1	11.033	11.033	7.19	.008
FRAUD SOX RELATIONSHIP	1	17.145	17.145	11.17	.001
CONFIDENCE	1	8.126	8.126	5.29	.023
ASNO2 FAMILIARITY	1	5.916	5.916	3.85	.052
INVESTED IN MUTUAL FUND	1	4.662	4.662	3.04	.084
Previously Invested	1	9.037	9.037	5.89	.016
Expect Management Inflate EPS	1	4.184	4.184	2.73	.102
Model	7	75.191	10.741	7.0	<.000
Error	116	178.097	1.535		
Corrected Total	123	253.289			

Panel C: ANCOVA Results for Internal Control Letter on Reliance on Management's Forecast					
Variable	**DF**	**Sum of Squares**	**Mean Squares**	**F Statistic**	**P-Value***
Internal Control Letter	1	.227	.227	3.19	.077
FRAUD SOX RELATIONSHIP	1	.538	.538	7.56	.007
CONFIDENCE	1	.503	.503	7.06	.009
ASNO2 FAMILIARITY	1	.097	.097	1.35	.247
INVESTED IN MUTUAL FUND	1	.071	.071	.99	.321
Previously Invested	1	.125	.125	1.76	.188
Expect Management Inflate EPS	1	.722	.722	10.14	.002
Model	7	2.255	.322	4.52	<.000
Error	116	8.262	.071		
Corrected Total	123	10.518			
Internal Control Letter: Treatment given with either high intention tone or no intention tone.					
FRAUD SOX RELATIONSHIP: Question asked the relevance of Sarbanes-Oxley to fraud.					
CONFIDENCE: Asked participants their confidence in their earnings per share predictions.					
ASNO2 FAMILIARITY: Asked participants about their familiarity with Auditing Standard No. 2.					
INVESTED IN MUTUAL FUND: Asked participants if they had invested in mutual funds.					
Previously Invested: Asked participants if they had previously invested in the stock market.					
Expect Management Inflate EPS: Asked if they expected management to inflate earnings.					
*P-Values are all two-tailed tests					

4.4.4   Statistical Assumptions Testing

Since the overall MANCOVA model was significant, the analysis proceeded with ANCOVA models for testing the hypothesis for each dependent variable. As a first step, the statistical assumptions associated with ANCOVA were evaluated. Therefore, in this section the statistical assumptions regarding each of the dependent variables are tested and discussed. Although different statistical methods may be used to analyze each of the hypotheses, most of the multivariate procedures have similar assumptions regarding the dependent variables. After examining whether there are violations of any of the assumptions underlying the statistical procedure for each hypothesis, the hypotheses will be discussed and tested.

ANCOVA tests are most appropriate when looking for main and interaction effects of a categorical independent variable and covariates on a dependent variable. There are three assumptions that should be met for the ANCOVA procedure: 1) each observation should be independent, 2) the dependent variables should follow a normal distribution, and 3) the variances between the groups should be equal (Hair et al. 1998). The accuracy of the ANCOVA procedure is also sensitive to data that is not representative of the sample population (outliers) (Hair et al. 1998).

This section proceeds as follows. Each of the assumptions are discussed and tested for each of the dependent variables in the model. A discussion of the assumption of independent observations is next followed by a discussion of the tests of normality, heteroscedasticity, and outliers.

4.4.4.1 Independent Observations

With respect to the assumption of independent observations, all participants in this study were randomly assigned to one of the treatments. No participants were allowed to participate in this study more than once and all participants worked individually. Therefore, each observation is independent of all others.

4.4.4.2 Multivariate Normality

Several methods were used to test if the dependent variables followed a normal distribution. Box and whisker plots and normal probability plots were used to graphically analyze the data. Normal probability plots allow a visual inspection of the data against a theoretically normal distribution pattern. Statistical methods measuring the skewness and kurtosis of the data were also examined for each dependent variable. Reported kurtosis numbers indicate the peak of the distribution, while skewness numbers indicate if the observations fall disproportionately to the left or the right of the distribution. Two statistical tests were also used to determine if a variable is normally distributed. The Kolmogorov-Smirnov and the Anderson-Darling statistics both test if data come from a normal distribution.

With respect to the credibility rating (H1), normal probability plots indicated the data were slightly skewed to the right, which was consistent with the skewness statistic of .43. The kurtosis statistic was -.369, which was represented in a graph as a higher peak around the midpoint of the data. The graphical results were consistent with the Anderson-Darling (p=.012) statistic but not the

Kolmogorov-Smirnov (p= .133) statistics. While the plots seemed to indicate the data were not normally distributed, the Kolmogorov-Smirnov test failed to find non-normality in the data set.

In testing for normality in the reliance on management forecast variable (H2), normal probability plots, a histogram and box and whisker plots indicated the reliance on management forecast data were positively skewed (skewness .96), with an overall low peak or very mild kurtosis (.13). Consistent with the graphical observations, the Kolmogorov-Smirnov (p=.010) and Anderson-Darling (p=.005) tests indicated the data were not normally distributed.

An examination of the difference in credibility ratings (H3) variable for normality indicated that the distribution of responses for this variable was not normally distributed. This is indicated graphically by normal probability plots, and a histogram that shows the data follow a normal distribution with a peak showing larger observations above the mean (kurtosis .43) and negative skewness (-.59). Statistical testing also indicated the data did not follow a normal distribution with the Kolmogorov-Smirnov (p = .010) and the Anderson-Darling (p=.005) tests rejecting the hypothesis that the data were normally distributed.

The plots related to the distribution of participant's difference in reliance on management's forecasts (H4) indicated the data were positively skewed (.35) with slightly more observations in the upper end of the tail (kurtosis .21). The conclusions reached by the graphical analysis were supported by a statistical analysis of the data using the Kolmogorov-Smirnov (p = .010) and Anderson-Darling (p = .005), which rejected the hypothesis of normally distributed data.

While only one of the four dependent variables met the assumption of normality, the ANCOVA method is robust to even critical violations of the normality assumption (Keppel 1982). The robustness of the ANCOVA methodology with respect to violations of normality is even greater when an equal number of observations per treatment group is compared, which is the case in this study. For these reasons, no adjustments were made to the data to address the non-normality found in the data.

4.4.4.3. Variance Between Groups

Testing the variances between groups involves looking at all of the levels of the independent variables to determine if the variance is similar at all levels. When the variance in the dependent variable is similar for all levels of the independent variable, the data are said to be homoscedastic. When there is a different amount of variance in the dependent variable at each level of the independent variable, the data are said to be heteroscedastic. Two tests were conducted to check for heteroscedasticity. A Levene's test for equality of variances was used, and a linear relationship was examined between the squared residuals and the predicted values for the dependent variables. The second test was conducted since it has already been determined the data are non-normal and a Levene's test is sensitive to non-normality.

Using a Levene's test of equal variances, it was determined that the credibility rating (H1) data did not display equal variance at all levels of the independent variable (p =.089). However, less than 1 percent of the variation in

the squared residuals was found to be associated with the predicted period one credibility rating variable, indicating no significant variance problems.

The Levene's test was also run for the reliance on management's forecast (H2) variable. Test results indicated that the distribution of responses displayed unequal variances across treatment conditions ($p = .024$). This was also found by testing the linear relationship between the squared residuals and the predicted values of the dependent variables. The results indicated that 13.7 percent of the variation in the squared residuals was associated with the variation in the predicted values.

In testing the variance between groups for the difference in credibility ratings (H3) variable, the Levene's test indicated the variance in the data was not consistent at all levels of the independent variable ($p = .014$). Evidence contradicting the Levene's test indicated less than 1 percent of the variance in the squared residuals was associated with the predicted difference in credibility ratings variable.

Finally, when testing the variance between groups for difference in reliance on management's forecast (H4), the Levene's test indicated the variance displayed was equal for all four treatment groups ($p = .169$).

Only one of the four variables consistently displayed heteroscedasticity (reliance on management's forecast). While it is prudent to exercise caution when interpreting results involving heteroscedasticity, the heteroscedasticity involving reliance on management's forecasts has been mitigated by the use of

equal cell sizes (Glass and Hopkins 1996; Garson 2006). Therefore, the heteroscedasticity found in the variables in this study is not a concern.

4.4.4.4. Testing for Outliers

Outliers are data points that seem to indicate they may not be representative of the sample population. An assumption of the ANCOVA procedure is that the data are representative of the sample population. To test the data regarding representativeness in relation to the sample population, statistical tests were conducted to find potential outliers in the dataset.

A Studentized Residual statistic was used to determine if there were outliers. The Studentized Residual procedure looks at the influence of each data point by removing it from the analysis and then examining the influence the individual observation had on the overall significance of the model. The calculation for the Studentized Residual statistic divides the deleted residual value by its standard error. A cutoff residual value of +/- 3.641 is used as a rule of thumb to identify outliers (Mendenhall and Sincich 1996). No outliers were found with respect credibility ratings (H1), the reliance on management's forecast (H2), and for the difference in credibility rating (H3). Two outliers were identified for the difference in reliance on management's forecasts (H4). The model was tested with both values eliminated. There was little effect on the overall model's significance after removing these observations but the observations did have a significant effect on the results of the ANCOVA for the main treatment (the financial results letter). The significance level of the t-test for the financial results letter went from .125 to .235. Since the results for H4 are insignificant, both with

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and without these two observations the observations were kept in the model leaving the model with an equal number of observations per cell.

4.4.4.5 Assumptions Testing Summary

While some of the assumptions tested were found to be violated, the statistical method (ANCOVA) employed in this study is fairly robust with respect to violations of normality and heteroscedasticity when there are equal treatment groups as was the case in this study (Glass and Hopkins 1996; Garson 2006). The one instance where outliers were observed (H4) did not impact the interpretation of the results.

4.5 Hypothesis Testing

In this section the statistical results for the four hypotheses are presented. Descriptive statistics for the relevant variables are presented first. Conclusions about the degree of support for the hypotheses are presented in this chapter. The overall conclusions regarding the results of the hypotheses tests are discussed in Chapter 5.

4.5.1 Testing of H1 and H2

The effect of the report on internal control (either high intention tone or no intention tone) was tested on the dependent variables, credibility rating (H1) and the reliance on management's forecast (H2). The significant covariates identified in section 4.4 were included in each model to account for their potential impact on the dependent variables.

4.5.1.1   Management's Credibility Rating (H1)

H1 predicted that users given management's letter on internal controls with a high intention tone would rate management's credibility higher than participants given management's letter on internal controls with a no intention tone. To determine the credibility rating (H1), participants completed the McCroskey and Teven (1999) credibility scale. The scale consists of 18 items with six questions for each of three factors: intention, trustworthiness, and expertise. To simplify the data analysis, the average credibility score was used for testing differences between the groups.

Table 25 presents the descriptive statistics for the dependent variable, credibility rating. As can be seen in Table 25, participants who were given management's report on internal controls with the high intention tone rated management's credibility higher (mean = 7.886) than participants who received the report with the no intention manipulation (mean = 7.088). These means are in line with H1, which predicted that participants in the high intention treatment would rate management's credibility higher than would participants in the no intention treatment.

Table 25: Descriptive Statistics for Credibility Rating (H1)

Descriptive Statistics for the Credibility Rating by Management Internal Control Letter Treatment						
	High Intention Letter			**No Intention Letter**		
Covariate	**Mean (Standard Dev)**	**Min**	**Max**	**Mean (Standard Dev)**	**Min**	**Max**
Credibility Rating	7.886 (1.517)	5.055	11.000	7.008 (1.235)	4.222	11.000
Credibility Rating: The average of the 18 questions from the McCroskey and Teven (1999) Credibility Scale						

To see if the participants in the high intention internal control letter treatment rated management's credibility higher than participants who were given the no intention internal control letter (H1) an ANCOVA was run using the internal control report as the treatment and credibility rating as the dependent variable. Four covariates identified in Table 14 as possibly impacting credibility rating were also included in the model: participant's confidence in completing the task (CONFIDENCE), their views on the Sarbanes-Oxley Act (FRAUD SOX RELATIONSHIP), their prior mutual fund investments (INVESTED IN MUTUAL FUND), and their familiarity with Auditing Standard No. 2 (ASNO2 FAMILIARITY). Table 26 shows the results of the ANCOVA model. The overall model is statistically significant (F = 7.94, two-tailed p< .001).

Table 26 also indicates that the impact of the different internal control letters on credibility ratings was significant (F = 6.94, one tail p=.006). The significant effect was in the direction hypothesized (see Table 22), supporting H1.

All four of the covariates were significant factors in the model. Three of the covariates were positively correlated with management's credibility ratings and one was negatively correlated with management's credibility rating. Participants'

opinions regarding the Sarbanes-Oxley Act (FRAUD SOX RELATIONSHIP) were significantly (F = 9.20, two-tailed p = .003) associated with credibility ratings, indicating that more knowledge of Sarbanes-Oxley led to higher ratings of management's credibility. Participants' confidence (CONFIDENCE) in completing the task was also significantly (F =4.66, two-tailed p = .033) associated with the ratings of management's credibility, indicating that more confidence led to higher ratings of management's credibility. Understanding of Auditing Standard No. 2 (ASNO2 FAMILIARITY) was also significantly (F =4.31, two-tailed, p = .040) associated with management credibility ratings, as greater understanding of Auditing Standard No. 2 led to higher credibility ratings. Investment history with mutual funds was significantly (F =8.91, two-tailed p = .004) associated with management's credibility ratings as well, but higher values on this question led to lower management credibility ratings.

Table 26: ANCOVA Results for Internal Control Letter's Impact on Credibility Ratings (H1)

Variable	DF	Sum of Squares	Mean Squares	F Statistic	P-Value
Internal Control Letter	1	10.422	10.422	6.49	.006*
FRAUD SOX RELATIONSHIP	1	14.770	14.770	9.20	.003
CONFIDENCE	1	7.485	7.485	4.66	.033
ASNO2 FAMILIARITY	1	6.914	6.914	4.31	.040
INVESTED IN MUTUAL FUND	1	14.302	14.302	8.91	.004
Model	5	63.790	12.758	7.94	<.000
Error	118	189.499	1.606		
Corrected Total	123	253.289			
Internal Control Letter: Treatment given with either high intention tone or no intention tone.					
FRAUD SOX RELATIONSHIP: Question asked the relevance of Sarbanes-Oxley to fraud.					
CONFIDENCE: Question asked participants their confidence in their earnings per share predictions.					
ASNO2 FAMILIARITY: Question asked participants about their familiarity with Auditing Standard No. 2.					
INVESTED IN MUTUAL FUND: Question asked participants if they had invested in mutual funds					
*P-Value adjusted for one-tailed test for Internal Control Letter only.					

4.5.1.2   Reliance on Management's Forecast (H2)

H2 predicts that users given management's letter on internal controls with a high intention tone will rely more on management's forecasts by revising their EPS forecast closer to management's forecast than participants given the internal control letter with no intention tone. Before testing H2, the participants' initial earnings per share estimates were compared between groups. The tone of the internal control letter should not have an effect on the initial earnings per share estimates made by participants. It was important to test the differences between the groups' initial earnings per share estimates because the tone of the internal control letters is expected to impact the participants' perception of

management's credibility, and therefore, the amount by which participants rely on management's forecast. The hypothesized relationship is between the two versions of the internal control letter and participants' reliance on management's forecast and not the participants' initial predictions. The results of the study could be impacted if the different internal control letters systematically resulted in user's estimating different initial earnings per share estimates for the company. As seen in Table 27 both groups had similar predictions for period one. The mean for the high intention treatment was $1.99 and the mean for the no intention treatment was $1.97, resulting in a statistically insignificant (t = .55, two-tailed p = .461) mean difference of $.02.

In addition to the period one prediction by participants, Table 27 also shows management's prediction of earnings per share estimates for period one and the participants' revisions of earnings per share after receiving management's prediction. Since management's period one prediction is mathematically derived based on the participants' initial period one prediction, no significant (t = .55, p = .461) difference exists between the two groups concerning management's predictions of earnings per share for the groups in period one.

H2 examines the reliance of participants' on management's forecast. Table 2 demonstrated how the participants' reliance on management's forecast is calculated. First the difference between the participants' revised earnings per share estimate and their initial earnings per share estimate is calculated, this is called the difference in EPS estimates. The difference in EPS estimates is then divided by the amount of surprise in management's forecasts. The amount of

surprise in management's forecast is measured as the difference in

management's prediction and the participant's initial earnings per share estimate.

The result is the reliance on management's forecast, which is used as a measure

of management's credibility. For example, if management's prediction was $.50

higher than the participant's initial earnings per share estimate and the

participant raised his/her earnings per share estimate by $.25, then the reliance

on management's forecast would be 50 percent.[16]

As Table 27 demonstrates participants in the high intention treatment

relied on management's forecast and adjusted their earnings per share estimates

by about 34.3 percent ($.22/$.64) of management's advocated change, while

participants in the no intention treatment only adjusted their earnings per share

estimates by 22.2 percent ($.14/$.63) of management's advocated change. The

greater reliance on management's forecast found in the high intention treatment

was consistent with the prediction of H2.

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[16] The percentage change from participant's first and second estimate was considered as an
alternate measure of reliance. However, I believe measuring reliance as a percentage of the
change advocated by management makes the practical explanation of the results clearer. If
management's advocated adjustment (the surprise) is 100%, this variable is a measure of how
much of that adjustment the participants believed was necessary.

Table 27: Descriptive Statistics for the Reliance on Management's Forecasts (H2)

Treatment Condition	Participants' Initial EPS Estimate Mean (Std. dev.) Min – Max	Management's EPS Forecast Mean (Std. dev.) Min – Max *	Surprise in Management's Forecast **	Participants' Revised EPS Estimate Mean (Std. dev.) Min - Max	Participants' Reliance on Management's Forecast Mean (Std. dev.) Min – Max ***
High Intention	$1.99 (.115)	$2.63 (.151)	$.64 (.037)	$2.21 (.264)	.343 (.328)
	$1.50 -$2.250	$1.980 – $2.970	$.480 -$.720	$1.550 – $2.870	0 - 1.225
No Intention	$1.97 (.211)	$2.60 (.279)	$.63 (.068)	$2.11 (.279)	.222 (.242)
	$.500 - $2.20	$.660 - $2.90	$.160 - $.704	$.500 – $2.600	0 - .987
* Calculated as Participant's Initial Earnings Per Share * 1. 32					
** Calculated as Management's EPS Forecast – Participant's Initial EPS Estimate					
*** Calculated as (Participant's Revised EPS – Participant's Initial EPS) / Surprise in Management's Forecast					

The impact of the different internal control letters on the reliance on management's forecast was tested using ANOVA. Four covariates were included in the model. Recall from Table 16 that participants' familiarity with Sarbanes-Oxley (FRAUD SOX RELATIONSHIP), confidence in their earnings per share estimates (CONFIDENCE), their prior history with investing (PREVIOUSLY INVESTED), and their expectation of management inflating earnings (EXPECT MANAGEMENT INFLATE EPS) were significantly correlated with the reliance on management's earnings per share estimates; thus, they were included as controls for the test of H2.

Table 28 indicates the overall ANCOVA model used to test H2 was statistically significant (F = 5.86, two-tailed p <.000). As reflected in Table 28, the impact of the internal control letters was a statistically significant factor (F = 4.27, one-tailed p = .021) in the difference in reliance on management's forecast between participants in the high intention treatment (34.3 percent) and participants in the no intention treatment (22.2 percent), supporting H2. In agreement with the information provided in Table 16, all four covariates were significantly (alpha of .10) associated with reliance on management's forecast.

Table 28: ANCOVA Test of Reliance on Management's Forecast (H2)

Variable	DF	Sum of Squares	Mean Squares	F Statistic	P-Value
Internal Control Letter	1	0.305	0.305	4.27	0.021*
FRAUD SOX RELATIONSHIP	1	0.451	0.451	6.31	0.014
CONFIDENCE	1	0.491	0.491	6.88	0.010
EXPECT MANAGEMENT INFLATE EPS	1	0.693	0.693	9.71	0.002
PREVIOUSLY INVESTED	1	0.242	0.242	3.39	0.066
Model	5	2.090	0.418	5.86	0.000
Error	118	8.427	0.071		
Corrected Total	123	10.518			
Internal Control Letter: Treatment given with either high intention tone or no intention tone.					
FRAUD SOX RELATIONSHIP: Question asked the relevance of Sarbanes-Oxley to fraud.					
CONFIDENCE: Question asked participants their confidence in their earnings per share predictions.					
EXPECT MANAGEMENT INFLATE EPS: Question asked participants if they expected management to inflate their earnings per share predictions.					
PREVIOUSLY INVESTED: Question asked participants if they had ever made an investment in the stock market.					
* P-Value adjusted for one-tailed test.					

Three of the covariates were negatively correlated with the participants' reliance on management's forecast and one covariate was positively correlated with reliance on management's forecast. The three negatively correlated covariates were all significant with respect to the model and included participants' feelings regarding the Sarbanes Oxley Act (FRAUD SOX RELATIONSHIP) (F=6.31, two-tailed p= .014), their confidence (CONFIDENCE) in their earnings per share predictions (F= 6.88, two-tailed p= .010), and their expectations that management would inflate earnings (EXPECT MANAGEMENT INFLATE EPS) (F= 9.71, two-tailed p= .002). As the response values to these questions increased, participants' reliance on management's forecasts decreased.

Intuitively this made sense for the confidence (CONFIDENCE) variable and the expectation of management to inflate its earnings per share estimates (EXPECT MANAGEMENT INFLATE EPS). The more confident participants were in their selection of earnings per share the less likely they were to revise their forecast. Also, the more participants expected management to inflate its earnings per share estimates, the less likely they were to revise their own earnings per share estimates after receiving management's. There is no intuitive reasoning for participant's beliefs about the relevance on the Sarbanes Oxley Act (FRAUD SOX RELATIONSHIP) to reduce their reliance on management's forecasts. Participants' prior investing experience (PREVIOUSLY INVESTED) was significant (F= 3.39, two-tailed p=.066) and positively correlated with the reliance on management's forecast, indicating participants with more investing experience tended to rely more on management's forecasts.

4.5.2 Testing of H3 and H4

For period one, it was predicted that a letter from management with the high intention tone would lead to greater reliance on management's earnings per share forecast. In part, this was due to the fact that the participants in period one had no prior information regarding management's past forecast accuracy. Prior research has shown that management's past forecast accuracy can impact management's credibility ratings (Williams 1996; Hirst et al. 1999). When management fails to forecast accurately its credibility drops and so too does the market's reliance on management's forecasts. All of the participants in period two of the study knew of management's failure to accurately forecast its earnings per

share in period one. Therefore, it was expected that all of the participants' ratings of management's credibility would drop because management failed to meet its predicted earnings per share estimate from period one. Period two of the study examines the impact of manipulating management's tone in a communication with investors when investors have prior knowledge of management's inability to forecast accurately. For H3 and H4 the intention factor of management's credibility is manipulated using the tone of a communication from management to recipients who have received only inaccurate past forecasts from management. In period one, half of the participants in the study either received management's statement of internal controls with a high or no intention manipulation. In period two, the participants received a letter from management communicating the actual earnings results from period one of the study. The intention factor of credibility was manipulated in the actual earnings letter at either a high intention or no intention tone.

4.5.2.1 The Difference in Credibility Ratings from Period One to Period Two (H3)

Hypothesis three examines the impact of the communication tone (high intention vs. no intention) in the financial results letter on the difference in participants' rating of management's credibility from period one to period two. When management failed to meet its forecast, the prediction was that management would experience a smaller difference in credibility ratings from participants who received an earnings letter with the high intention manipulation.

Each participant completed the credibility scale twice; once after reading the internal control letter from management and once after reading the letter from

management explaining the company's failure to forecast earnings per share. To test H3, participants' ratings of management's overall credibility in period two were subtracted from participants' overall ratings of credibility in period one.

Table 29 presents the credibility rating scores for period one and period two, as well as the difference in overall credibility ratings from period one to period two. As can be seen in Table 29, participants who received the high intention financial results letter in period two reduced their rating of management's credibility less than participants who received the no intention financial results letter. The participants who received the high intention financial results letter in period two rated management's mean credibility 7.513 in period one and 7.009 in period two; thus, the decline in management's credibility ratings is .504. The participants who received the no intention financial results letter in period two rated management's credibility 7.461 in period one and 6.594 in period two; thus, the decline in credibility ratings is .867. The participants in the no intention treatment reduced their ratings of management credibility by more than participants in the high intention treatment.

Table 29: Descriptive Statistics for the Difference in Credibility Ratings from Period One to Period Two (H3)

Credibility Ratings for Period One and Period Two and the Difference in Credibility Ratings from Period One to Period Two			
Treatment Condition	Period One Credibility Rating Mean (Std. dev.) Min - Max	Period Two Credibility Rating Mean (Std. dev.) Min - Max	Difference in Credibility Ratings Mean (Std. dev.) Min - Max
High Intention	7.513 (1.450)	7.009 (1.876)	0.504* (1.466)
	4.222 - 11.000	3.281 - 10.940	-4.333 - 2.166
No Intention	7.461 (1.431)	6.594 (1.764)	0.867* (1.017)
	5.000 - 10.611	3.333 - 10.500	-3.500 - .500
62 participants in each treatment condition			
* Positive means indicate a gain of credibility			

Prior testing (Table 17 and 18) revealed that two covariates should be included in the analysis of H3. The two covariates are study of Sarbanes-Oxley (STUDIED SOX) and investment in mutual fund (INVESTED IN MUTUAL FUND). These covariates are included in the ANCOVA model reported in Table 30, which displays the results of testing the difference in credibility ratings between the high intention and no intention tone financial results letters for period two. The model is significant (F= 5.55, two-tail p=.002). In support of H3, the financial results letter indicates a significant (F= 2.66, one-tailed p = .053) difference in credibility ratings.

Both covariates were significant with respect to the model. Student's history with studying Sarbanes-Oxley was significantly (F= 4.17, two-tailed p= .044) associated with the difference in credibility ratings, indicating that more knowledge of Sarbanes-Oxley led to larger drops in rating management's credibility. There was also a significant (F= 9.06, two-tailed p= .032) difference in responses for students who had previously invested in mutual funds. Those with

previous investment experience were also more likely to drop their rating of

management's credibility from period one to period two.

Table 30: ANCOVA Test of Difference in Credibility Ratings (H3)

Variable	DF	Sum of Squares	Mean Squares	F Statistic	P-Value
Financial Results Letter	1	3.866	3.866	2.66	0.053*
STUDIED SOX	1	6.059	6.059	4.17	0.044
INVESTED IN MUTUAL FUND	1	13.149	13.149	9.06	0.032
Model	3	24.147	8.049	5.55	0.002
Error	120	174.160	1.451		
Corrected Total	123	205.486			
* One tailed P-Value					
Financial Results Letter: Treatment given with either high intention tone or no intention tone.					
STUDIED SOX: Question asked participants if they studied Sarbanes-Oxley. INVESTED IN MUTUAL FUND: Question asked participants if they had invested in mutual funds					

4.5.2.2   The Difference in Reliance on Management's Forecast (H4)

Hypothesis four examines the difference in reliance on management's

forecast from period one to period two of the study. It was predicted that the

communication tone (high intention vs. no intention) of the financial results letter

would impact the difference in reliance on management's forecast from period

one to period two. While H3 examines the loss in the creditability rating scores

from period one to period two, H4 examines the difference in reliance on

management's forecast from period one to period two. It was predicted that

participants who received the high intention financial results letter would have a

smaller decline in reliance on management's forecasts after receiving

management's estimate than the participants who received the financial results

letter with no intention manipulation.

In each period of the study participants' reliance on management's forecasts was indicated by the revision in their initial earnings per share estimates after receiving management's forecast. As defined in the testing of H2 and demonstrated in Table 2, the reliance on management's forecasts is first measured by subtracting the participants' revised earnings per share estimate from their initial earnings per share estimate, and then dividing that difference by the amount of surprise in management's forecasts. The amount of surprise in management's forecast is measured as the difference in management's prediction and the participant's initial earnings per share prediction.[17] The result of the calculation is the percentage change in forecasts, which is used as a measure of reliance on management's forecasts. The reliance on management's forecast was made for both periods one and two and the difference in reliance on management's forecast (H4) is then measured as the percentage change (revision) from period two subtracted from the percentage change (revision) in period one.

Figure 1 demonstrates the research model used in the study. Only two factors influence the amount of investors' belief revision: surprise and credibility. By holding the amount of surprise constant and then comparing the difference in the amount of belief revision between period one and period two of the study it is possible to attribute the belief revision to the decrease or loss in management's credibility. For example, if a participant had relied on management's forecast and

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[17] The percentage change in participant's earnings per share estimates is calculated as (Revised earnings per share - Initial earning per share) / (Management's predicted earnings per share – Initial earnings per share.)

revised his/her earnings per share estimate by 30 percent of what management advocated in period one and only 20 percent in period two, the participant's reliance on management's information dropped. Since the amount of surprise was held constant the change in beliefs must be due to a drop in credibility as less reliance was placed on management's surprise information in period two.

Table 31 provides the descriptive statistics for the difference in reliance on management's forecast between groups. The participants who received the financial statement letter with the high intention manipulation revised their earnings per share estimates in period one by 24.0 percent of the change advocated by management. In period two they revised their earnings per share estimates by only 10.8 percent of management's advocated change. Overall, the participants who received the high intention financial statement letter had a decline in reliance on management's forecasts of 13.2 percent. In contrast, the participants who received the financial statement letter with no intention manipulation revised their earnings per share estimates in period one by 31.3 percent of the change advocated by management, and in period two they revised their earnings per share estimates by 15.7 percent of management's advocated change. Overall the participants who received the no intention financial statement letter had a decline in reliance on management's forecasts of 15.5 percent from period one to period two.

Table 31: Descriptive Statistics for the Difference in Reliance on Management's Forecasts (H4)

Reliance on Management's Forecast for Period One & Period Two and the Reduction in Reliance Between Periods			
Treatment Condition	**Period One EPS Adjustment Mean (Std. dev.) Min – Max**	**Period Two EPS Adjustment Mean (Std. dev.) Min - Max**	**Mean Difference in EPS Adjustment Mean (Std. dev.) Min - Max**
High Intention	0.240 (.278)	0.108 (.149)	0.132* (.267)
	0 - 1.225	0 - 0.614	-0.510 - 0.864
No Intention	.313 (.304)	.157 (.220)	.156* (.297)
	0 – 1.000	0 - 1.007	-0.625 - 0.792
62 participants in each treatment condition			
* Positive means indicate a gain of credibility			

To test H4, an ANCOVA model was used to determine if the difference between the groups receiving the high intention letter and the no intention letter was statistically significant. The dependent variable used in the model was the difference in reliance on management's forecasts from period one to period two and the independent variable was the financial statement letter. One variable was included as a covariate (useful) to control for differences found between participants' estimates of earnings per share and the actual earnings per share for period one.[18] Table 32 displays the results of the ANCOVA model. The model is significant (F= 100.77, two-tailed p-value <.000). While the model is significant, the financial statement letter is insignificant (F = 1.34, one-tailed p=.125).

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[18] For more information on the useful variable refer to section 4.4.2.8.4 and Table 19.

Table 32: ANCOVA Results for Difference in Reliance on Management's Forecast (H4)

Variables	DF	Sum of Squares	Mean Squares	F Statistic	P-Value
Financial Results Letter	1	0.040	0.040	1.34	.125*
Useful	1	6.083	6.083	200.99	< .000
Model	2	6.099	3.049	100.77	< .000
Error	121	3.662	0.030		
Corrected Total	123	9.761			
Financial Results Letter: Given at two levels high intention and no intention tone.					
Useful: The usefulness of the period one forecast.					
* One tailed P-Value					

The covariate (useful) was found to be significant (F=200.99, two-tailed p<.000) and had the greatest influence on the participant's loss of credibility in period two. The useful variable measured the difference between participants' final earnings per share estimate in period one and the actual earnings per share for the company. Positive values of the useful variable indicate that participants' final earnings per share estimate was above the actual earnings per share for the company. Negative values of the useful variable indicated participants' final earnings per share estimates were below the actual earnings per share for the company. Participants with larger positive values of the useful variable relied less on management's forecast in period two.

4.6 Post Hoc Analysis

4.6.1 Overview of Post Hoc Analysis

In this section of the study I will examine other impacts of the treatments on participants' judgment and decision making. The post hoc analysis will proceed as follows. In period one, H1 predicted that the internal control letter would impact the rating of management's credibility. Since the "management credibility" construct actually comprises three sub-factors—intention, trustworthiness, and expertise—the impact of the internal control letter (high intention vs. no intention) on each of these three sub-factors will be examined in the post-hoc analysis.

Also discussed will be the unintended treatment created by the design of the study. The impact of the unintended treatment on the results of period two was included in the model for H4 as a covariate called useful. The useful variable will be examined further in this section.

4.6.2 The Impact of Altering Tone on the Perception of Management's Credibility

When the participants filled out the credibility scale in period one, they completed 18 questions that load on three sub-factors of credibility. In period one, an average credibility score comprised of all 18 questions was used to examine the differences between groups. In this section a MANOVA test is used to determine the impact of the management internal control letter on each of the average scores for the three sub-factors of credibility (intention, trustworthiness and expertise). The results of the ANOVA tests are presented in Table 33. Recall

from Table 25, participants in the high intention treatment gave management a mean credibility rating of 7.89 compared to those in the no intention treatment who rated management's average credibility at 7.01. These results were similar for the three sub-factors of credibility. With respect to the intention factor of credibility participants in the high intention treatment rated management's intention an average of 7.66 while participants in the no intention treatment rated management's intention an average of 6.66. With respect to management's trustworthiness, participants in the high intention treatment rated management's trustworthiness 7.68 on average while participants in the no intention treatment rated management's trustworthiness 7.02 on average. There was also a significant difference with respect to management's expertise ratings. The participants in the high intention group rated management's expertise an average of 8.31 while participants in the no intention group rated management's expertise 7.58 on average. The letters from management with a manipulated intention tone significantly ($p = .05$) impacted each of the sub-factors of management's credibility.

Table 33: Descriptive Statistics for Sub-Factors of Credibility

Treatment	High Intention	No Intention	Comparison	
Credibility Question (1=Less 11=More)	Mean (Std. Dev.)	Mean (Std. Dev.)	F Statistic	p-value*
Average Intention	7.669 (1.768)	6.664 (1.311)	12.93	< 0.000
Average Trust	7.682 (1.679)	7.024 (1.303)	5.95	0.008
Average Expertise	8.306 (1.522)	7.578 (1.400)	7.7	0.003
* One tailed p-value				

4.6.3 Examination of Period Two Results as a Function of the Usefulness of Period One's Prediction

In period two, it was expected that the participants who received the financial statement results letter with the high intention tone of credibility would have a smaller change in reliance on management's forecast than the participants who received the financial results letter with no intention tone. Upon further examination it was determined that the most significant factor impacting the results for H4 was the period one forecast.

The study was originally designed as a one period study examining the impact of altering the tone of the communication from management to investors on investors' ratings of management's credibility and reliance on management's forecast. The design of the study was then expanded to a second period. For period two, it was decided that for both treatment groups, management would fail to meet its forecasted results for period one, thus lowering the credibility of management. A written communication from management would be used to attempt to reduce the loss of credibility resulting from failing to meet forecasted

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earnings. It was expected that altering the tone of the written communication would reduce the loss of credibility.

In period one of the study, participants were allowed to freely pick their initial earnings per share estimates, and management's prediction of earnings per share, as well as the actual period one results, were based on a constant percentage of each participant's initial earnings per share estimate. Management's forecasts were always 132 percent of the participants' initial earnings per share estimates and actual results were always 109 percent of the initial earnings per share estimate. For example, if one participant predicted earnings per share in period one of $1.00, management's prediction of earnings per share would be $1.32 and the actual results for the period would be reported as $1.09. A second participant could select an initial earnings per share estimate of $2.00 and be told management had predicted earnings per share of $2.64 with the actual results for period one at $2.18. The comparisons across all treatment groups were made based on percentage changes and not absolute dollar amounts. So if the participant in example one had revised his/her initial estimate to $1.16 and the participant in example two had revised his/her initial estimate to $2.32 then both participants had revised their predictions by 50 percent of management's recommendation. A comparison of initial earnings per share estimates by participants in period one revealed no difference between the groups in the high and low condition. Therefore, both groups effectively began period two at the same point since the actual period one earnings were based on the participant's initial earnings per share estimate from period one.

While participants in period one began the study at about the same place with respect to earnings per share estimates (no difference in their earnings per share between groups), they were not at the same place at the conclusion of period one of the study. The participants in the high intention treatment had revised their initial earnings per share estimates (34 percent) more than the participants in the no intention treatment (22 percent). An example of the difference caused by the revision in period one can be explained as follows. Using two participants "X1" and "X2," assume X1 is assigned to the high intention treatment in period one and X2 is assigned to the no intention treatment in period one. Both X1 and X2 predict their initial earnings per share estimate as $1.00. They will both receive the same earnings per share estimate from management of $1.32 and actual earnings for period one will be reported as $1.09. Suppose, participant X1 revised his earnings per share by 34 percent of the surprise information given by management or $.11 (34 percent x $.32 = $.11) while participant X2 revised her initial prediction by 22 percent of the surprise information given by management or $.08 (22 percent x $.32= $.08). When the actual results for period one are reported at $1.09, participant X1, in the high intention group, had an estimate that was higher ($1.11) than the actual results of $1.09 while X2 had a prediction that was lower ($1.08) than the actual results. It was assumed that all participants would begin the period using the actual earnings from period one as a basis for the period two tasks. The difference between each participant's period one revised estimate and the actual earnings per share for period one might inadvertently have impacted the effectiveness of

the treatments in period two. The difference found between the revised period one estimates and actual period one results impacted both participants' initial earnings predictions for period two and the amount of reliance on management's forecasts for period two.

The impact of this unintended variable can actually be explained with prior findings from accounting literature. Williams (1996) examined the relationship between the usefulness of prior earnings forecasts by management and analyst revisions to current forecasts. In her study, Williams gives an example of the usefulness of a prior forecast where two companies (firm A and firm B) made earnings predictions of $2.75 and $2.50, respectively. The actual earnings per share of each company was $3.00, so Firm A's forecast was deemed more accurate. To differentiate accuracy from usefulness, Williams furthers the example by supposing that analysts had estimates of earnings for Firm A of $2.90 ($.10 lower than actual earnings) and Firm B of $2.00 ($1.00 lower than the actual earnings). For Firm A, management's forecast was $.15 lower than analysts' forecast and for Firm B management's forecast was $.50 higher than analysts' forecasts. Thus, in this example, Firm B's forecast was more useful to analysts since it provided more information based on analysts' current level of belief, even if it was not more accurate.

Data from the current study can be used to test Williams (1998) notion of a difference between forecast usefulness and forecast accuracy. In period one of this study management's forecasts and the actual results for period one were a fixed percentage of each participant's initial earnings per share estimate. The

accuracy of management's forecast was constant between all of the participants in the study. What varied between participants in period one of the study was the participants' revised expectations of earnings per share. Therefore, for each participant we can determine the usefulness of management's prediction by examining the difference between each participant's revised (or expected) earnings per share and the actual earnings per share for period one.

Participants who were in the high intention treatment for period one had a mean difference of .033 above the actual earnings per share, while participants who were in the no intention treatment in period one had a mean difference of .035 below the actual earnings per share. This difference between the two treatments was statistically significant (F= 4.15, one-tailed p=.022).

In examining the percentage of accuracy for management's prediction, both of the treatment groups had management predictions that were identical. Management's initial prediction of earnings was 132 percent of participants' initial earnings per share estimate and the actual earnings were 109 percent of the participants' initial earnings per share estimate for both groups.

The expectation of earnings per share for the participants in the high intention group was above the actual earnings per share for period one, while the expectations of earnings per share for the no intention tone group was lower than the actual earnings per share for period one. The data indicate that participants whose expectations were above the actual earnings per share in period one predicted lower earnings per share estimates for period two but they also did not revise their earnings per share estimates in period two as much as the

participants whose expectations of earnings per share were below the actual

results for period one. Stated differently, participant's who had experienced

management's earnings per share estimates that were below the actual earnings

per share estimates in period one found the period two management forecast of

earnings per share to be more useful. Since accuracy was held constant

between treatment conditions, these results indicate that the usefulness of the

forecast and not the forecast accuracy was driving the results in period two.

These findings add some support for the Williams (1998) proposition that

forecast usefulness and forecast accuracy are two separate constructs.

5.0 Summary and Conclusion

5.1 Summary of Study

This study was designed to examine the impact of the intention factor of management credibility on investors' decision making. Credibility is a latent variable with three sub-factors: expertise, trustworthiness, and intentions. The intention factor of credibility is a perception variable that measures perceived understanding, empathy, and responsiveness of a communicator. The study manipulated management's intention via written communications with participants. The impact of manipulating the perception of management's intention factor of credibility was then examined using both ratings of management's credibility and by examining participant's reliance on management's forecasts of earnings per share estimates.

There were four hypotheses tested in this study. In H1 and H2 participants had no information regarding management's prior forecast history. In H3 and H4 the changes from period one to period two were examined after participant's experienced management failing to meet its forecast from period one.

As stated above, in period one of the study, participants had no prior knowledge of management's forecast accuracy. The participants, representing average investors, were given background financial information regarding the company. Included in the financial information was a letter from management

regarding the effectiveness of internal controls for the company as required by

the PCAOB. One half of the participants received a letter that had a high

intention tone, while the other half received a letter with no intention tone. H1

predicted that participants who received the high intention tone letter would rate

management's credibility higher than participants who received the letter from

management with no intention manipulation. The findings from the study

supported the prediction of H1, in that participants who received the high

intention letter from management rated management's credibility significantly

higher than the participant's who received the letter with no intention tone. These

findings were statistically significant at an alpha of .10. This suggests that

management can increase its credibility by communicating with a tone that

implies understanding, empathy, and responsiveness to investors' concerns.

In addition to testing the rating of management's credibility, a second

hypothesis was also tested in period one. Participants in both groups (high

intention vs. no intention tone) completed a task in which they predicted earnings

per share for the company for period one. After making their earnings per share

predictions they received management's prediction of earnings per share.

Participants were then given an opportunity to revise their earnings per share

prediction. H2 predicted that participant's who had received the high intention

letter would rely more on management's predictions by revising their earnings

per share estimates closer to management's than those participants who

received the letter from management with the no intentions manipulation.

Support was found for H2 as participants who had received the high intention

treatment revised their earnings per share to a greater degree than those who received the letter with no intention tone.

In period two of the study, H3 and H4 were tested. Period two of the study begins with the participants from period one receiving a letter from management stating the actual earnings per share for period one. For all participants management failed to meet its forecasted estimate. Failing to meet its forecasted estimate of earnings per share should reduce management's credibility (Williams 1996; Hirst et al. 1999). The manipulation for H3 and H4 had one half of the participants receive the earnings letter with a high intention tone while the other half of the participants received a letter with the no intention tone. Differences in credibility ratings and reliance on management's forecasts from period one to period two of the study were tested.

Hypothesis three predicted that the participants who received the financial results letter from management with the high intention tone would not lower their rating of management's credibility as much than those who received the financial results letter from management with the no intention tone. The hypothesis was tested by having each participant rate management using the same credibility scale in both periods one and two. To compare the difference in credibility ratings, a difference score was calculated using period one and two credibility ratings. Higher difference scores indicated greater loss of credibility. In looking at the difference in credibility ratings between the treatment groups (Table 29) a statistically significant difference was found, providing support for H3 in that participants who received the high intention financial results letter reduced their

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perceived credibility of management less than participant's receiving the no intention tone letter.

In addition to testing the difference in credibility ratings between periods one and two, the difference in the reliance on management's forecast was also tested between period one and period two (H4). It was expected that when management failed to meet its earnings per share estimates that participants would reduce the amount by which they relied on management's forecasts. H4 predicted that participants who received the earnings letter with the high intention tone would reduce their reliance on management's forecast less than participants who received the earnings letter with no intention tone. However, the results indicated that the tone of the financial results letter was an insignificant factor in determining the loss of credibility from period one to period two of the study. Thus, there was no support for H4.

Table 34 summarizes the overall results of the study. The study found support for H1 and H2 suggesting that management can influence the perception of its credibility by the tone it uses when communicating with investors. The increase in credibility was seen in both participants' ratings of management's credibility and the reliance on management's forecast when predicting earnings per share. The study also found support for H3, which posited that when management fails to meet its earnings per share estimates, it can mitigate its loss of credibility by altering the tone of its written communications with investors. The impact of the financial results letter did significantly impact the difference in credibility ratings from periods one and two of the study. However, the financial

results letter was not a significant factor in the amount of reliance on management's forecasts (H4) as there was no significant difference between the treatment groups in period two.

An unintentional finding of the study involves the usefulness of management's forecast. After receiving information from management, participants in the high intention treatment in year one had revised their earnings per share estimates above the actual earnings per share for the period while participants in the no intention treatment had revised their earnings per share estimates below the actual earnings per share estimates for the period. The impact of the difference between the year one treatment groups could be seen in the revisions of earnings per share predictions in year two. Participants who over-relied on management by selecting an estimate of earnings per share higher than the actual earnings per share for period one seemed to rely less on management's forecast in period two. Participants who under-relied on management's forecast, and who subsequently had earnings per share estimates lower than the actual earnings per share for period one, tended to rely more on management's forecast in period two. This finding gives support to the findings from Williams (1996) who used market data to determine if the usefulness of management's forecast was more important than the accuracy of management's forecast.

Table 34: Summary of Hypotheses and Findings

Hypothesis	Dependent Variable	Independent Variable	Covariates	Overall Model*	Hypothesized Effect**	Table Reference
H1	Credibility Rating	Internal Control Letter	FRAUD SOX RELATIONSHIP CONFIDENCE ASNO2 FAMILIARITY INVESTED IN MUTUAL FUND	F= 7.94 **p<.000**	F = 6.49 **p =.006**	Table 26
H2	Reliance on Management's Forecast	Internal Control Letter	FRAUD SOX RELATIONSHIP CONFIDENCE EXPECT MANAGEMENT- INFLATE EPS	F = 5.86 **P <.000**	F = 4.27 **p = .021**	Table 28
H3	Difference in Credibility Rating	Earnings Results Letter	STUDIED SOX INVESTED IN MUTUAL FUND	F = 8.049 **p = .002**	F = 2.66 **p = .053**	Table 30
H4	Difference in Reliance on Management's Forecast	Earnings Results Letter	Useful	F= 100.77 **p = <.000**	F = 1.34 **p = .125**	Table 32
* Two tailed test						
** One tailed test (adjusted for directional hypotheses)						

5.2 Limitations

This study was designed as a laboratory experiment. With appropriate controls for the effects of extraneous variables, the laboratory experiment sought to maintain high internal validity. However, laboratory experiments may have lower external validity than field studies in which a real business task is being performed by experienced decision makers. The lower external validity might limit the generalizability of the findings. The experiment was designed as an abstraction of a task an investor might face. Participants were given limited background regarding a fictitious company. Although the limited information in the task reduces the external validity of the study's findings, it is necessary to reduce the amount of variation for each participant to maintain internal validity at as high a level as possible. In this task all participants were given the same background information and financial statements. The only differences between experimental materials were the treatment effects. Therefore, given that participants were randomly assigned to treatments, any observed variation in participants' responses should be due to either random (uncontrolled) individual differences between participants or the treatment conditions. Individual differences can be controlled through randomizing the participants into treatments and analyzing the tested differences post hoc using demographic questions as possible covariates. The individual differences measured and tested as covariates in this study did not alter the study's findings.

The use of students as participants in experiments can sometimes pose a threat to validity. However, in this study the use of student subjects does not represent a limitation. The study was designed to examine a theoretical link between management's perceived intentions based on the tone of its written communications and investors' willingness to rely on management's guidance. Prior research (Ashton and Kramer 1980; Libby et al. 2002) indicates that when a theoretical link is being examined students can be appropriate participants. Even if this study employed professional stock analysts, the amount or percentage of their adjustments to their earnings per share predictions could not be used to measure or predict future adjustment percentages but could only be used to show support for the theory that future judgments will be impacted by perceptions of management's credibility.

Another limitation in this study is a problem in the design of the study that was found only after all of the data were collected. The study was originally designed as a one period study to test the impact of altering the intention tone on the perceptions and amount of revision in estimates when participants had no prior knowledge of management's prior forecast accuracy. It was decided that since the participants would complete the study in a short amount of time, it would be reasonable to extend the study to examine the impact of altering the tone of communications when the participants have prior knowledge that management has failed to forecast accurately. In period one of the study the participants were allowed to select their initial earnings per share estimates. To control for the amount of surprise in management's information between

participants, the forecast given by management was calculated as a percentage of the participant's initial earnings per share estimate (132 percent). Participants were then allowed to alter their forecast after receiving management's estimate. When the study was expanded to include the second period, a decision was made to hold the accuracy of management's period one prediction to 109 percent of the participant's initial earnings per share estimate. Thus, all participants would receive forecasts from management that were inaccurate by a constant percentage of management's earnings per share estimate. What was not considered in the design of the study was how the difference between participants' revised earnings per share estimates and the actual results of earnings per share for the period would impact participants' future reliance on management's forecast. The participants who were in the high intention condition in period one revised their earnings per share estimate closer to management's earnings per share estimate than the participants in the no intention treatment. Management's estimates of earnings per share as well as the actual results of the period were calculated based on the participants' initial earnings per share estimates. There was no difference between the treatment groups in the initial earnings per share estimates, but there were differences in the revised earnings per share estimates. When the actual results for period one were reported, the mean earnings per share estimate for the participants in the high intention treatment were higher than the actual earnings per share for the period, while the mean earnings per share estimates for the participants in the no intention treatment were lower than the actual earnings per share for the period. As a

result, the participants did not begin period two on an even basis. The difference between the actual earnings per share for period one and the participants' revised earnings per share estimates in period one drove the behavior of the participants in period two more than any of the treatments. The flaw in the design of the study may explain the lack of findings in period two. The unintended effect was much more powerful than the treatment effect designed in the study.

5.3   Contributions

The findings from this study offer contributions to accounting research, accounting policy makers and to the psychology literature on persuasion and credibility. In accounting research, this study expands upon two prior research streams in accounting. With respect to the introduction of credibility scales in accounting, this study builds upon the findings of Mercer (2004, 2005) by expanding the two factor model of credibility, consisting of expertise and trustworthiness, to the three factor model of credibility, which includes the intention factor. The findings from period one of this study suggest that the intention factor of credibility should also be considered when measuring management's credibility.

Also with respect to accounting research, an unintended consequence of the design of this study (as discussed in the limitations and post hoc analysis sections) offers experimental support for the findings of Williams (1996) in which the usefulness of a prior earnings forecast issued by management impacts the reliance on future forecasts. While prior research had used the accuracy of prior forecasts, Williams (1996) suggested that the usefulness of a forecast and not its

accuracy would determine future belief revision. Williams (1996) defined usefulness as a forecast which improved upon initial earnings expectations. In this study the accuracy of management's earnings per share estimates were identical between treatment groups, however, the participants who had predicted the earnings per share higher than the actual results (the high intention treatment group) relied less on management predictions in period two of the study than the participants with predictions of earnings per share less than the actual results (the no intention period one group). These findings indicate that forecast usefulness as opposed to accuracy is a better indicator of future forecast revisions when management issues guidance.

This study contributes to accounting policy making. The PCAOB's (2004) Auditing Standard No. 2, "An Audit of Internal Control over Financial Reporting Performed in Conjunction with an Audit of Financial Statements" leaves the wording of the report up to management. The choice to leave the wording of a mandatory report to management could lead users to different decisions based on the wording used in the management reports. In this study altering the tone of communications with management was enough to impact management's credibility ratings and the amount of reliance participants placed on management's forecast estimates. These findings suggest that more research should be conducted to determine the impact of wording on the manner in which decision-makers use accounting reports. It is important to note that the different reports did not impact the participant's initial earnings per share estimates, only the amount by which participants relied on management forecasts. While this

seems insignificant, it suggests that research looking at the impact of different types of reports, such as differences in audit reports versus reviews and compilations, may not have been properly designed to measure the impact of the reports on investors' decision-making.[19] Many of these studies failed to find differences between decision makers when making immediate decisions such as the decision to lend, the interest rate at which to lend, and the maximum loan amounts (Strawser 1994). However, these studies did not examine how the wording of the reports impacted other constructs such as management's credibility. In this study management's credibility was affected by the letters included in the financial statements, yet there were no differences between groups in their initial estimates of earnings per share for the company. The participant's did however, show differences in their reactions to future decisions when given information by management. The lending decisions in prior studies were found to be based on the solvency of the company more than any of the reporting formats (Blackwell et al. 1998). Had the prior studies examined the impact of the different accounting reports on the bankers' reactions to future events they may have found differences in how the bankers' reacted to explanations of these future events based on the type of report the accountants issued to management.

This study also contributes to the persuasion and credibility literature in psychology by further validating the three factor model of credibility presented by McCroskey and Teven (1999). Additionally, a task was examined where the perception of credibility (as measured by the McCroskey and Teven Credibility

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[19] See Strawser 1991,1994 for a review of prior research.

Scale) and actual decisions were compared when participants viewed reports that differed in the tone used to communicate information. The task used in presented an example of a single factor of credibility (intention) was manipulated and measured successfully. Prior psychological research has had difficulty in finding tasks to manipulate that test the individual sub-factors of the credibility model (O'Keefe 1990).

5.4 Future Research

Other scales of credibility could be used to examine how different factors may impact auditor credibility. Testing could be done to determine if wording in auditor reports could impact the perceived intentions of the auditors and thus impact auditors' overall credibility. The standard wording in audit reports may reduce the impact those reports have on decision-makers.

This study found support for the assertion that different forms of management's statement on internal controls impact investors' judgments. Currently, under Auditing Standard No. 2 management is allowed considerable latitude in choosing its wording in the required statement on internal controls. Future research could be conducted in this area to determine if standard reports with prescribed (or constrained) wording would allow for more consistent investor interpretations of the reports. Also, different standard reports could be explored to determine which format investors prefer.

Future research could also focus on testing the impact of tone on actual investors and/or institutional investors. This study was conducted using students

who are a proxy for investors. Actual investor responses may alter the conclusions reached in this study.

The model of credibility including the factors known to mediate the impact of credibility as discussed in the appendix should be examined further. Path analyses can be used to examine if the covariates in the model follow the direction and strength of the theory.

5.5 Conclusion

This study presents strong evidence that the tone of communications used by management may impact the participants' ratings of management's credibility and the amount of reliance participants place on management's forecasts. The robustness of this finding was also tested after management had failed to meet its earnings per share forecast. After failing to make a forecast, the tone of communications was able to mitigate the reduction in management's credibility ratings by participants. The tone of communications was not able to mitigate the loss of credibility as measured by participants' reliance on management's forecasts in period two of the study.

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Appendices

Appendix A: Moderating Factors That Influence Credibility or Its Impact on Belief Revision

The model of credibility's impact on belief revision used in the study accounts only for factors that are introduced in the study. There are other factors known to affect credibility or to impact the effect credibility has on belief revision. This Appendix describes these factors as mediators and moderators. Mediators are variables that will affect the level of credibility. Moderators will not affect credibility but rather impact the role credibility plays in belief revision.

Mediating Variables of Credibility

Two variables that can impact a person's credibility are knowledge biases and reporting biases. Eagly and Wood (1978) propose that the position taken by a communicator will interact with the message recipient's expectations of the communicator position. This interaction affects the message recipient's perceived credibility of the communicator. These expectancy biases are referred to as knowledge bias and reporting bias (Eagly et al. 1978). Both of these biases and their expected effect on credibility are diagramed in Figure 3 and will be discussed in the following sections.
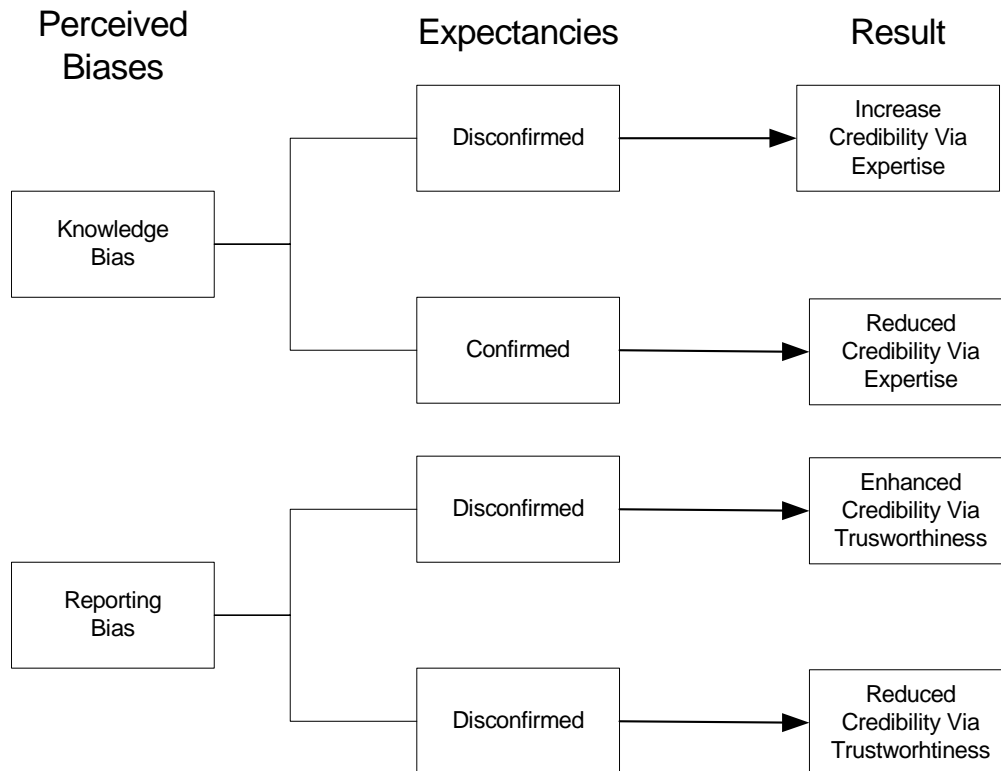
Figure 3. Eagly, Wood and Chaiken (1978) Reporting Bias and Knowledge Bias

Knowledge Bias

Message recipients may expect a communicator to advocate a certain biased position based on the communicator's background. Eagly and Wood (1978) note the influences on a communicator can be internal or external. Internal influences are influences such as a person's biological makeup (skin color, body composition, and gender). For example, people with a particular ethnic background are expected to favor programs and policies that benefit people similar to them. If, for instance, a law maker was a member of a protected class of individuals, via affirmative action, some message recipients of this law maker might believe he/she will be in favor of a particular affirmative action legislation that benefits his/her group. If he/she were to vote for this action people would assume it was because of their heritage. If they violated that expectation

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and voted against the legislation, some message recipients would believe the action was taken based on the merits of the legislation (in spite of the legislator's background) and therefore, more credible.

External influences are environmental factors that are expected to bias a communicator. Observers may feel that a communicator's education about a specific issue is non-representative of the whole issue. For example, a person with a degree from a Christian college might be expected to have a more conservative stance on some issues. If he/she were to take a more progressive stance we would assume he/she was taking this stance in spite of his/her background; that, therefore, his/her knowledge in general must be greater than previously expected.

Knowledge biases can be thought of as a stereotype. People expect certain people to act a certain way. When this expectancy is confirmed, the persuasiveness of the communicator's message may be reduced. It is believed that this reduction in persuasiveness is due to a reduction in the perceived expertise of the communicator (O'Keefe 1990). Eagly and Wood (1978) reject the argument that confirmation of knowledge bias corresponds to the notion of expertise; the very notion that a person with a biased set of information would be thought of as an expert with respect to a field where his/her knowledge about the topic is biased seems counterintuitive. O'Keefe (1990) seems to be in agreement, stating that a communicator with a perceived knowledge bias is perceived as less competent.

Reporting Bias

       A reporting bias occurs when a message recipient believes communicators may alter their message to conform to the audience to which they are speaking (Eagly et al. 1978). Message receivers may discount an otherwise credible source when they perceive a reporting bias. Reporting biases are believed to occur when a communicator delivers a message that differs from his/her true beliefs because of perceived external pressures (Pastore and Horowitz 1955; Eagly et al. 1978). One example of a reporting bias is a message from a young Republican presidential candidate to members of the AARP (formerly the American Association of Retired Persons) about the need for expanding Medicare benefits. A person judging the credibility of the communicator may believe that this young Republican may not really feel that Medicare needs to change in as much as they believe the communicator is telling the audience what it wants to hear.

       When a reporting bias is violated message recipients should deem the communicator more credible. In the example of the young Republican, if the message were consistent with the expectations of a young Republican and inconsistent with the desires of the AARP audience the communicator would be perceived to be more trustworthy with respect to communicating his/her true beliefs. Eagly and Wood (1978) believe that reporting bias corresponds fairly well with the trustworthiness factor of credibility in that violations of the reporting bias indicate a propensity to communicate assertions the communicator believes are valid without regard to the audience.

With respect to financial forecasts, it is possible that negative news forecasts are a violation of a reporting bias. The expectation of positive information by investors is a perceived reporting bias. Investors expect management to release positive information, since the release of negative information causes the stock price of the firm to drop (Lev and Penman 1990; Skinner 1994; Kasnik and Lev 1995; Libby and Tan 1999). Therefore, when management releases negative information, it is opposite investor's expectation's (a disconfirmation of the reporting bias) indicating the credibility of the disclosure should rise. This appears to be supported by research, negative news announcements cause greater revision in market expectations and are therefore more credible (Skinner 1994; Stocken 2000; Rodgers and Stocken 2002). [20][21]

Variables That Moderate the Effect of Credibility

Other factors can influence the magnitude of the effect that credibility can have on a recipient. Factors such as the recipient's *level of involvement* with the task and the *timing of identifying the communicator*, along with *the position of the message*, can influence the magnitude of the effect of source credibility (O'Keefe 1990). It is important to note that these factors should not affect credibility, only the amount of influence credibility has. I will discuss each of these factors. A flowchart is also presented (

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[20] There is a possibility the market reacts to negative forecasts because of their form. Skinner (1994) found that negative news forecasts were usually point estimates. Pownall and Waymire (1989) found that point forecasts revisions in general were more informative than other types.
[21] The studies mentioned were not specifically looking at reporting bias although the theory would help support their findings.

Figure 4) to aid in understanding how these variables interact with credibility.
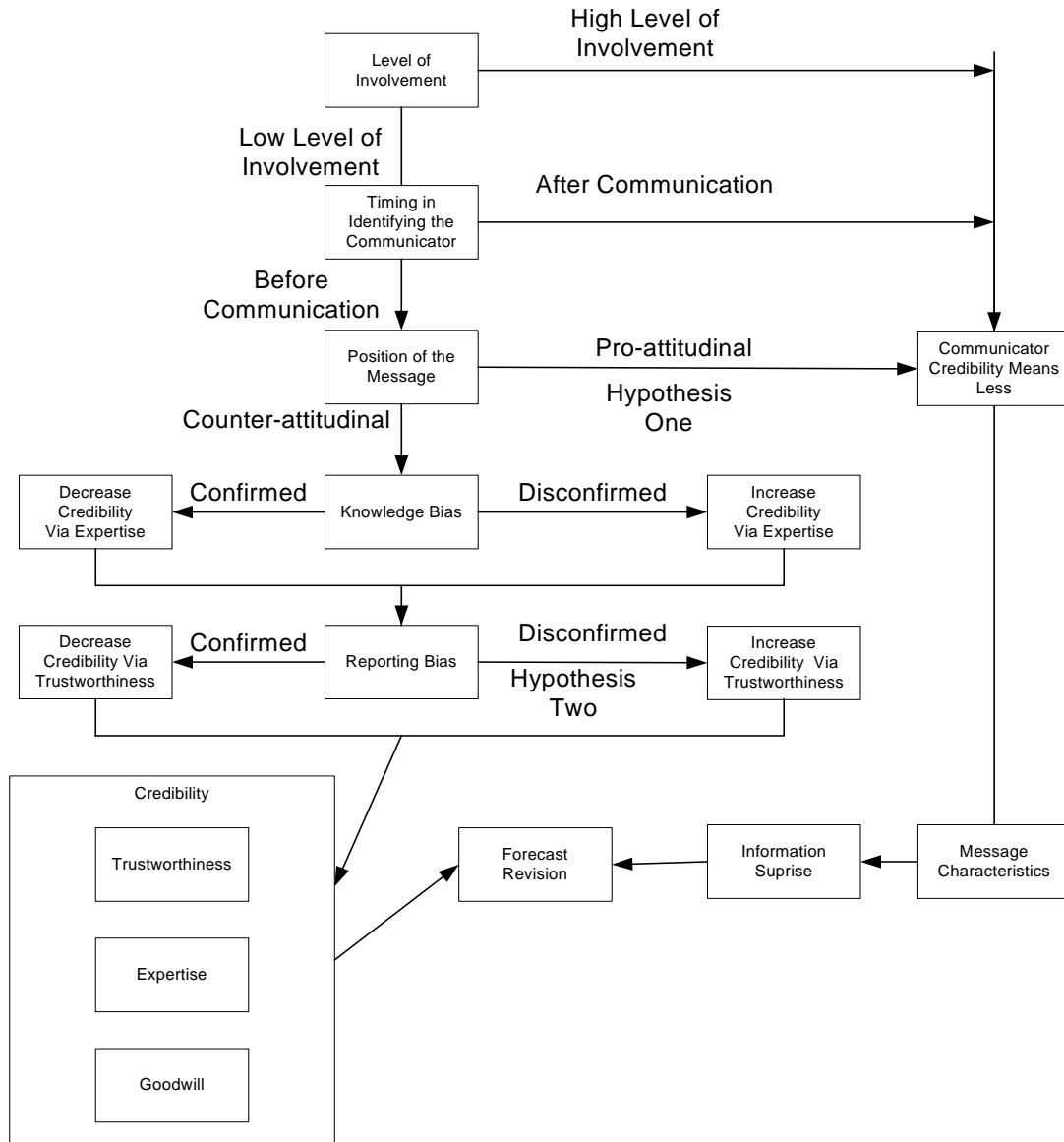
Figure 4. Moderating Variables to Credibility

Level of Involvement

Recipients with a high level of involvement with respect to the message are less likely to be influenced by differences in credibility while perceivers with a low level of involvement are more likely to be affected by source credibility (Figure 5) (O'Keefe 1990). The relationship between involvement and sensitivity to source credibility is believed to exist because perceivers that are highly involved with respect to a particular subject are more likely to form their own opinions about the validity of the communicator's statements. Recipients who are involved in the task at a high-level are more likely to pay attention to the details of the message and to pick apart the message and base the importance of the message on its content. In the current study, all participants were believed to have a low level of involvement with the particular task. None of the participants in the study were expected to be experts in the field.

Message Recipient's Level of Involvement

```
                    ┌─────────────┐     ┌─────────────┐     ┌─────────────┐
                    │ High Level of│ →  │ Credibility  │ →  │   Message    │
                    │ Involvement  │     │ Means Less   │     │Characteristics│
                    └─────────────┘     └─────────────┘     │  Mean More   │
┌─────────────┐                                              └─────────────┘
│ Receiver's  │
│  Level of   │
│ Involvement │
└─────────────┘
                    ┌─────────────┐     ┌─────────────┐
                    │ Low Level of │ →  │ Credibility  │
                    │ Involvement  │     │ Means More   │
                    └─────────────┘     └─────────────┘
```
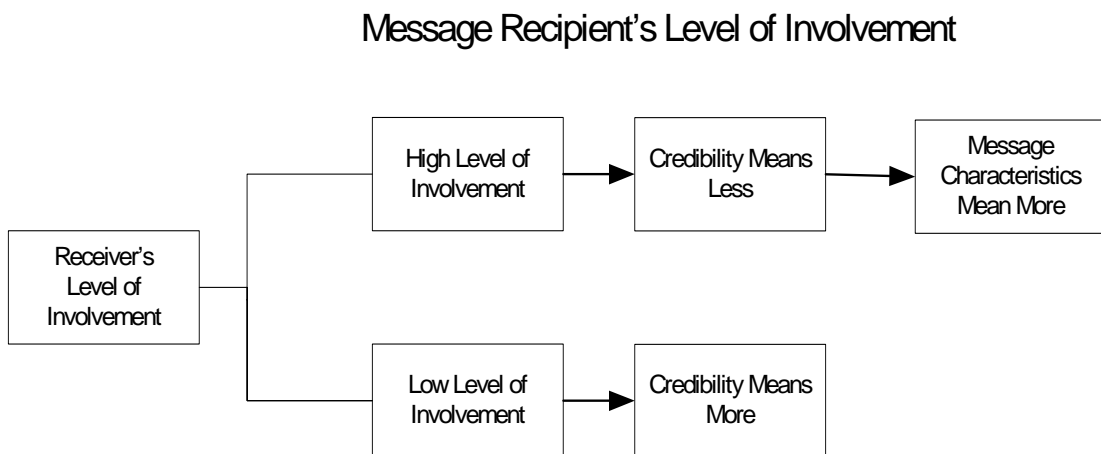
Figure 5. O'Keefe's Level of Involvement Affect on Credibility

Timing of Identifying the Communicator

The timing of identifying a communicator is also believed to impact the magnitude of effect from source credibility. When a communicator is identified before a message is received source credibility will have a greater impact on the perceiver. When the source is identified after the message is received the perceiver is believed to be more affected by the message characteristics than by the source credibility (O'Keefe 1990). Figure 6 shows the relationship between identifying the communicator before and after a message. When a communicator is identified after a message has been given receivers are likely to pay more attention to message details as the message is delivered.
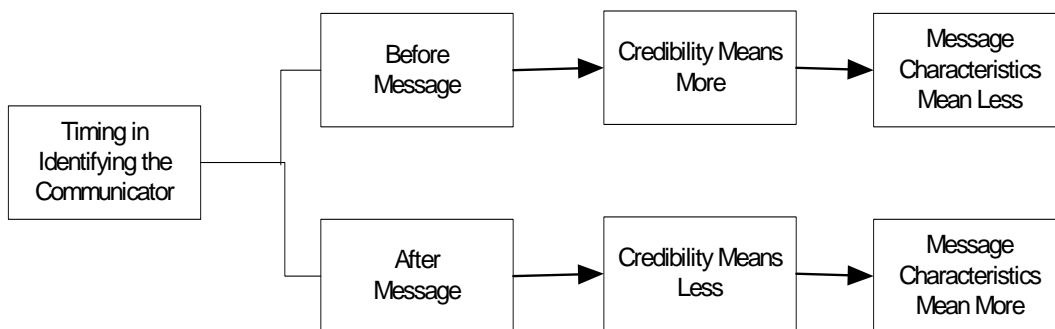
Figure 6. Timing of Identifying the Communicator

Influence of Message Direction

The position a communicator takes with his/her message can also affect the influence of credibility on the perceiver. A communicator can send a message that is pro-attitudinal or counter-attitudinal with respect the perceiver's position on a topic (O'Keefe 1990). Pro-attitudinal messages are in line with prior beliefs of the perceiver. Counter-attitudinal messages are opposite what the perceiver

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believes. Pro-attitudinal messages diminish the role of credibility in judgments; whereas, counter-attitudinal messages usually require a more credible communicator (Figure 7). It is important to understand that pro-attitudinal messages do not actually reduce the amount of perceived credibility of a communicator; they just diminish the role credibility plays in the judgment process for the perceiver. The diminished role of credibility could be a type of ceiling effect, in that a message recipient who already holds strong beliefs about a topic has less room for opinion change. Whereas when the message is in the opposite direction, the participant has more room for opinion change, and therefore, the role of credibility is enhanced, or at least appears to be as there will be more room for an effect to be found.
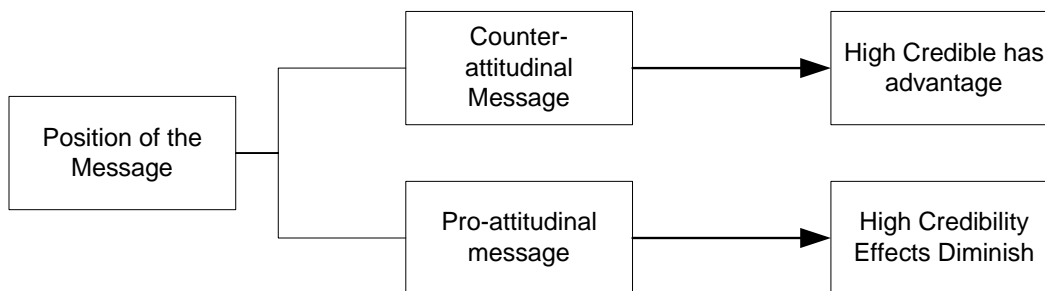
Figure 7. Position of Message

Appendix B: View of Experimental Materials Used for Pilot Study

The following pages show a screen shot of each stage of the experiment with a brief description of the picture.

1. General Instructions: Participants are given the general instructions for completing the task. They are notified of their right to leave the exam at any time as well as their compensation for participating.

General Instructions

Thank you for participating in this study. The purpose of the study is to investigate how investors make judgments and decisions. Your participation today should take approximately 30-45 minutes. There is payment for participating in this study of $15. Once you complete the study you will be redirected to a separate page, which collects information needed for compensation. You will be notified by email regarding when payment will occur.

You will be given information about a company and asked to answer some questions. Please read every page carefully and do your best to answer the questions as they are presented to you. Your responses are a very important part of this study.

Please do not discuss this study with other students until you have been notified the study has ended. Discussing this study with others may invalidate the results of the study.

Your input is very important to this study and I appreciate your participation.

Robert D. Slater, Jr.

[Next]   [Cancel]

Appendix B Continued

2.   Informed Consent: Participants have an opportunity to read the Informed Consent form. They have a yes/no button to indicate voluntarily consent to participate in the experiment.

Informed Consent

Social and Behavioral Sciences
University of South Florida
Information for People Who Take Part in Research Studies

The following information is being presented to help you decide whether or not you want to take part in a minimal risk research study. Please read this carefully. If there is anything you do not understand, ask the person in charge of the study.

Title of Study: Management Forecasting

Principal Investigator: Robert D Slater

Study Location(s): University of South Florida, College of Business

You are being asked to participate in this study because you represent the average stock market investor.

General Information about the Research Study

The purpose of this research study is to develop an understanding of how investors use forecasted earnings information provided by management.

Plan of Study

Participants will be given background financial information about a particular company and will be asked to make predictions about the earnings per share for the company. They will also answer opinion-type questions about management.

Payment for Participation

Participants will be paid $15 for participating in both the pilot study and the main study. Participants man leave the study at any time and they will be compensated on a pro-rata basis for their time spent on the study. Pilot study data will not be included in the final sample but will be discussed in the paper.

Once you have completed the study, you will be directed to a separate data collection instrument. This instrument will allow you to input your payment information. This information will not be linked to your study responses.

Informed Consent Continued

Benefits of Being a Part of this Research Study

Participants may benefit from participating in this study by developing an understanding of management earnings forecasts.

Risks of Being a Part of this Research Study

There are no physical or mental risks to participating in this study.

Confidentiality of Your Records

Your privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, and the USF Institutional Review Board, its staff, and other individuals acting on behalf of USF, may inspect the records from this research project.

The results of this study may be published. However, the data obtained from you will be combined with data from others in the publication. The published results will not include your name or any other information that would personally identify you in any way.

No participants will be specifically identified with the data collected. All information will be kept private in a password-protected folder on a password-protected computer. Data collected for payment purposes will be collected and kept separate from the study data.

Volunteering to Be Part of this Research Study

Your decision to participate in this research study is completely voluntary. You are free to participate in this research study or to withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive, if you stop taking part in the study.

Questions and Contacts

- If you have any questions about this research study, contact Robert D. Slater (813) 974-7340, rslater@coba.usf.edu

- If you have questions about your rights as a person who is taking part in a research study, you may contact the Division of Research Compliance of the University of South Florida at (813) 974-5638.

Appendix B Continued
Informed Consent Continued

Consent to Take Part in This Research Study

By clicking yes below you agree that:

- I have fully read or have had read and explained to me this informed consent form describing this research project.

- I have had the opportunity to question one of the persons in charge of this research and have received satisfactory answers.

- I understand that I am being asked to participate in research. I understand the risks and benefits, and I freely give my consent to participate in the research project outlined in this form, under the conditions indicated in it.

- I have been given a signed copy of this informed consent form, which is mine to keep.

Investigator Statement

I have carefully explained to the subject the nature of the above research study. I hereby certify that to the best of my knowledge the subject signing this consent form understands the nature, demands, risks, and benefits involved in participating in this study.

Robert D. Slater, Jr.

I consent and would like to continue to complete this study.*
  ○ Yes ○ No

If you do not with to continue with this study at this time, click the button labeled Cancel below.

| Next | Cancel |

Appendix B Continued
3.   Instructions: An overview of the task is then given to each participant.

Information

For the purposes of this study, you are asked to assume that you are a member of an investment club that currently holds the common stock of MBMC, Inc., a dental supply company. You will be provided with background information and selected financial information about MBMC, Inc. Based on this information, you will be asked to provide several judgments about MBMC, Inc. and its management. The case information is not intended to include all the information that would be available if you were evaluating the common stock of MBMC, Inc. However, for purposes of this study, base your judgments on the information provided.

The case materials contain several sets of instructions detailing how to proceed during the study. Please read these instructions carefully.

[Next]   [Cancel]

For some questions in this study you will be given a statement such as:

"My personal feelings for ice cream are:"

You will be given a scale with two end point descriptions. You are not limited to the endpoint items and can select any point along the scale that best represents your feelings.

For example, if you were indifferent about ice cream you would select a point somewhere in the middle of the scale such as #5 or #6.

The numbers on these scales are irrelevant. Pay attention to the wording on the end points of the scale. One question may be stated with one end of the scale being positive and the other negative while another question may have the answers stated negative to positive. See the two examples below. Read each question and answer carefully, then find the point on the scale that best represents your beliefs.

My personal feelings for ice cream are:
I like ice cream..I dislike ice cream
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

My personal feeling for exercise is:
I dislike exercise...I like exercise
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

Appendix B Continued

4. Background Information: Participants are instructed as to their role in the task.

Background Information

For this study, assume you are a member of an investment club. One of the stocks owned by the club is that of MBMC, Inc. In this study, you will be given some background information and financial data from the most recent annual report of MBMC, Inc. Please review each piece of information carefully before moving on. Once you click continue on a page you cannot go back to a previous page.

[Next]   [Cancel]

5. Company Background: Participants are given a brief background about the company.

Company Background

MBMC, Inc., is a Delaware-based company that develops and manufactures equipment used by dentists and dental hygienists. The Company's primary products include prophylaxis products (used in teeth cleaning and polishing procedures) and dental X-ray equipment. The Company markets its products to dental professionals using a network of medical and dental distributors. The products are sold in North America, as well as several key international markets, including Europe, South America, Central America, and the Pacific Rim.

[Next]   [Cancel]

Appendix B Continued

6.   Products: Participants are told about the products the company
         produces.

Products

The Company's engineers and chemists are focused on developing innovative professional dental products and are actively involved in improving the Company's manufacturing processes. Frequently, these products are designed and developed in response to needs articulated to the Company by dental professionals.

Prophylaxis angles, cups, and brushes:
Prophy products consist of two components - an angle that extends from a dental hand piece and a rubber cup or brush which is attached to the angle and performs the cleaning function. During the prophylaxis process, the cup or brush is filled with abrasive paste, which is applied to the teeth as it rotates. The Company produces and markets a number of different disposable prophy angles, cups, and brushes.

X-ray equipment:
The company manufactures and markets a line of dental X-ray equipment under the Panorama brand name. This equipment is used by dentists and orthodontists to locate and predict the movement of teeth in order to fit braces and other orthodontia. The products also are used by oral surgeons to detect pathology and to determine bone and teeth alignment before and after surgery.

[Next]   [Cancel]

Appendix B Continued

7.   Internal Control Letter: Participants are given the letter from management, "Assessment of Internal Controls Over Financial Reporting." At this point participants are broken into two groups:
        a. Internal Control High Intention letter.

Assessment of Internal Controls Over Financial Reporting

The management of MBMC, Inc. is responsible for establishing and maintaining adequate internal control over financial reporting. MBMC, Inc. has established an internal control system to provide management and the board of directors with reasonable assurance that the published financial reports are fairly presented.

The management of MBMC, Inc. met with focus groups of shareholders to develop an understanding of shareholder concerns. Extensive consideration was given to shareholders concerns in developing internal controls for reliable, accurate, and timely information. We will continue to monitor the changing needs of our shareholders in an ongoing basis.

In satisfaction of the Public Accounting Oversight Board's Standard No. 2, we have assessed the internal controls of MBMC, Inc. as of December 31, 2003. Our assessment was made using the Internal Control—Integrated Framework of internal control criteria as developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our assessment, using the stated criteria, it is our belief that as of December 31st 2003 the company's internal controls over financial reporting are effective.

MBMC, Inc. has provided our assessment of internal controls over financial reporting to our registered independent auditors. They have issued an attestation report on our assessment of internal controls over financial reporting.

Next   Cancel

b. Internal Control No Intention letter.

Assessment of Internal Controls Over Financial Reporting

The management of MBMC, Inc. is responsible for establishing and maintaining adequate internal control over financial reporting. MBMC, Inc. has established an internal control system to provide management and the board of directors with reasonable assurance that the published financial reports are fairly presented.

In accordance with a directive from the MBMC, Inc. board of directors, management met with a focus group. The purpose of the directive was to obtain information on developing internal controls for reliable, accurate, and timely information. We will continue to monitor changing needs as directed by our board.

In satisfaction of the Public Accounting Oversight Board's Standard No.2, we have assessed the internal controls of MBMC, Inc. as of December 31, 2003. Our assessment was made using the Internal Control—Integrated Framework of internal control criteria as developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our assessment, using the stated criteria, it is our belief that as of December 31st 2003 the company's internal controls over financial reporting are effective.

MBMC, Inc. has provided our assessment of internal controls over financial reporting to our registered independent auditors. They have issued an attestation report on our assessment of internal controls over financial reporting.

Next	Cancel

Appendix B Continued

8.   Financial Statements: All participants are given the prior income statement and balance sheet information.

9.   Earnings Per Share Prediction One Period One: Participants give an estimate of earnings per share.

MBMC, Inc.
Balance Sheet As of December 31, 2003
(Audited)

	2002	2003
Assets		
Current Assets	$14,486	$14,438
Long Term Assets	40,258	45,898
Total Assets	54,744	60,336
Liabilities and Stockholder's Equity		
Current Liabilities	4,686	5,000
Long term debt	1,857	3,199
Total Liabilities		
Stockholders equity	48,201	52,137
Total Liabilities and Stockholders Equity	$54,744	$60,336

MBMC, Inc.
Income Statement
Year Ended December 31, 2003
(Audited)

	2001	2002	2003
Net Sales Revenue	$24,986	$36,595	$42,712
Cost of Sales	10,129	16,467	18,825
Gross Margin (Profit)	14,847	20,128	23,887
Selling, General, and Administrative	7,333	10,623	12,195
Income From Operations	7,524	9,505	11,692
Interest Expense	876	(326)	(32)
Taxes	2,538	3,782	4,572
Net Income	4,110	6,049	7,152
Earnings Per Share	$1.28	$1.64	$1.88

Based on the financial statements provided on the left, please enter your prediction of earnings per share for the company in the box below:*

Enter the amount using only numbers and a decimal point. Do not add dollar signs or commas.

[   ]

[Next]   [Cancel]

10.　Management's Earnings Per Share Prediction Period One: Management provides participants with its earnings per share prediction for the same period. Management's prediction is 132 percent of the participant's earnings per share estimate for the same period.

MBMC Inc. Predicts Earnings per share for the year ending December 31st, 2004.

Delaware-January 15th, 2004-In a teleconference broadcast via the Internet, the president of MBMC, Inc. indicated that the company expected earnings per share for the current year to be $2.64.

MBMC, Inc. is a leader in the design and manufacturing of prophylaxis products and dentals x-ray equipment used by dentists and dental hygienists.

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[Next] [Cancel]

11.　Earnings Per Share Prediction Two Period One: Participants are given an opportunity to revise their initial earnings per share predictions.

Management of MBMC, Inc. has predicted earnings per share of $2.64.

Your prior prediction of earnings per share was $2.00. At this time you have the opportunity to revise your earnings per share estimate. Please type your revised earnings per share in the box below. If you wish to keep your estimate the same, please re-type that amount in the box below.*
Enter the amount using only numbers and a decimal point. Do not add dollar signs or commas.

2.45

[Next] [Cancel]

Appendix B Continued

12.   Credibility Rating One: Participants fill out the credibility instrument comprised of 18 Likert scale questions on an eleven-point scale.

      a. Six expertise factors

I believe that management of MBMC, Inc.:*
Cares about me...Does not care about me

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc.:*
Has my interest at heart ....Does not have my interest at heart

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Self Centered...Not Self Centered

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Concerned with me...Unconcerned with me

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Insensitive..Sensitive

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Not Understanding...Understanding

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

Appendix B Continued

b. Six intention factors

I believe that management of MBMC, Inc. is:*
Intelligent..Unintelligent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Untrained..trained

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Inexpert..Expert

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Informed..Uninformed

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Incompetent..Competent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Bright..Stupid

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

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c. Six trustworthiness factors

I believe that management of MBMC, Inc. is:*
Honest...Dishonest

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Untrustworthy...Trustworthy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Honorable..Dishonorable

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Moral...Immoral

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Unethical..Ethical

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Phony...Genuine

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

Appendix B Continued

13. Earnings Letter: Management informs the participants about the actual earnings per share for period one. This amount is 109 percent of the participant's initial earnings per share estimate. This is 23 percent less than management's prediction. There are two different earnings letters:

    a. High intention earnings letter.

Dear Shareholder:

At MBMC, we understand that our company's financial performance is important to you. We understand that the financial performance of MBMC impacts the return you receive from your investment and that you have every right to expect a positive return on your investment. Because management and our employees also invest in MBMC we are able to identify with your concerns.

Our annual financial statements are about to be released. Unfortunately, our earnings per share for the year 2004 is $2.18, which is below the prediction we made in the beginning of the year. We sincerely apologize to you, our shareholder, for missing our earnings target.

As the management of MBMC, we care about what our investors have to say. If you would like to express your concerns and/or opinions regarding our performance, or if you have general questions about MBMC we strongly encourage you to contact our investor relations department at 1-800-555-2135. We work closely with the investor relations department making sure suggestions and comments from investors are followed up promptly. We value our shareholders.

Sincerely,

Management, MBMC Inc.

[Next] [Cancel]

Appendix B Continued

b. No intention earnings letter.

Dear Shareholder:

At MBMC, our shareholders expect a positive return on their investment. It is the financial performance of MBMC that helps determine the return shareholders receive from their investment and influences their decision to invest in MBMC.

Our annual financial statements are about to be released to the public. You should soon receive your copy of the annual report. The earnings per share for the fiscal year 2004 is $2.18, which is below the prediction we made in the beginning of the year.

Please contact the investor relations department if you would like more information about the company. Investors may contact the MBMC investor relations department at 1-800-555-2135. The investor relations department forwards written copies of investor comments to management.

Sincerely,

Management, MBMC, Inc.

[Next]   [Cancel]

Appendix B Continued

14.   Financial Statements Two: Participants are given a copy of the income statement for the first period in which they predicted earnings per share. This also included the three prior years of data.

15.   Earnings Per Share Prediction One Period Two: After reading the financial statements the participants are asked to make an earnings per share prediction for the next year.

MBMC, Inc.

Income Statement

Year Ended December 31, 2004

(Audited)

	2001	2002	2003	2004
Net Sales Revenue	$24,986	$36,595	$42,712	$56,204
Cost of Sales	10,139	16,467	19,825	25,292
Gross Margin (Profit)	14,847	20,128	23,887	30,912
Selling, General, and Administrative	7,323	10,623	12,195	16,299
Income From Operations	7,524	9,505	11,692	14,613
Interest Expense	876	(326)	(32)	4
Taxes	2,538	3,782	4,572	6,170
Net Income	4,110	6,049	7,152	8,439
Earnings Per Share	$1.28	$1.64	$1.88	$2.18

Based on the financial statements above, please enter your prediction of earnings per share for 2005 for MBMC, Inc in the box below: *
Enter the amount using only numbers and a decimal point. Do not add dollar signs or commas.

[Next]   [Cancel]

16.   Management's Earnings Per Share Prediction Period Two:
       Management provides participants with their earnings per share
       prediction for the same period. Management's prediction is 132
       percent of the participant's earnings per share estimate for the same
       period.

MBMC Inc. Predicts Earnings per share for the year ending December 31st, 2005.

Delaware-January 15th, 2005-In a teleconference broadcast via the internet, the president of MBMC, Inc.
indicated that the company expected earnings per share for the current year to be $3.036.

MBMC, Inc. is a leader in the design and manufacturing of prophylaxis products and dental x-ray equipment
used by dentist and dental hygienists.

.

| Next | Cancel |

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17.   Earnings Per Share Prediction for Period Two: Participants are given
       an opportunity to revise their initial earnings per share predictions.

Management of MBMC, Inc. has predicted earnings per share of $3.036.

Your prior prediction of earnings per share was $2.3. At this time you have the opportunity to revise your
earnings per share estimate. Please type your revised earnings per share in the box below. If you wish to
keep your estimate the same, please re-type that amount in the box below.*
Enter the amount using only numbers and a decimal point. Do not add dollar signs or commas.

| Next | Cancel |

Appendix B Continued

18.   Credibility Rating Two: Participants fill out the credibility instrument comprised of 18 Likert scale questions on an 11 point scale.

        a. Six intention factors

I believe that management of MBMC, Inc.:*
Cares about me..Does not care about me

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc.:*
Has my interest at heart ....Does not have my interest at heart

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Self Centered..Not Self Centered

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Concerned with me...Unconcerned with me

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Insensitive..Sensitive

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Not Understanding...Understanding

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

Appendix B Continued

b. Six expertise factors

I believe that management of MBMC, Inc. is:*
Intelligent...Unintelligent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Untrained...trained

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Inexpert..Expert

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Informed..Uninformed

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Incompetent..Competent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Bright..Stupid

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

Appendix B Continued

c. Six trustworthiness factors

I believe that management of MBMC, Inc. is:*
Honest...Dishonest

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Untrustworthy...Trustworthy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Honorable...Dishonorable

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Moral..Immoral

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Unethical..Ethical

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

I believe that management of MBMC, Inc. is:*
Phony...Genuine

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

[Next]   [Cancel]

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Appendix B Continued

19.   Manipulation Questions: Participants answer manipulation questions about both letters they have received.

Management's Forecast for year 1 was:*
Lower than I expected................Much More than I expected
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

Management's Forecast for year 2 was:*
Lower than I expected................Much More than I expected
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

Management's Forecast for year 1 was:*
Accurate...Inaccurate
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

Management's Forecast for year 2 was:*
Accurate...Inaccurate
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

[Next]   [Cancel]

Based on management's letter regarding the effectiveness of internal controls, I believe management understands my needs as a shareholder.*
◉ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Based on management's letter regarding the effectiveness of internal controls, I believe management believes my needs as a shareholder are important.*
○ Strongly Agree ◉ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Based on management's letter regarding the effectiveness of internal controls, I believe management is responsive to my needs as a shareholder. *
○ Strongly Agree ○ Agree ◉ Neutral ○ Disagree ○ Strongly Disagree

[Next]   [Cancel]

Manipulation Check Questions Continued

Based on management's letter regarding the actual results for year one, I believe management understands my needs as a shareholder. *

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Based on management's letter regarding the actual results for year one, I believe management believes my needs as a shareholder are important. *

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Based on management's letter regarding the actual results for year one, I believe management is responsive to my needs as a shareholder. *

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

[Next] [Cancel]

20. Covariate Questions – Fraud

Please answer the following questions based on your own beliefs and personal experiences.

Do you believe management fraud is prevalent?*

○ Yes ○ No

Managers are most likely to report earnings estimates correctly.*
Enter the selection which best sums up your opinion of the previous statement.

○ Very Likely ○ Likely ○ Neutral ○ Unlikely ○ Very Unlikely

I would rely on management's forward looking forecasts if an independent auditor provided assurance on management's assertions.*
Enter the selection which best sums up your opinion of the previous statement.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I trust management in providing me with foreword looking forecasts.*
Enter the selection which best sums up your opinion of the previous statement.

○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

[Next] [Cancel]

Appendix B Continued

Covariate Questions: Fraud Continued

Have you ever been defrauded by a public company?*
○ Yes ○ No

Do you know of someone who has been defrauded by a public company?*
○ Yes ○ No

Have you ever heard of someone who was defrauded by a public company?*
○ Yes ○ No

Have you ever committed fraud as a member of management?*
○ Yes ○ No

Have you read about instances of management fraud in the news?*
○ Yes ○ No

[Next]   [Cancel]

21.   Covariate Questions- Sarbanes Oxley

I believe Sarbanes-Oxley is:*
Please select the response below that best fits belief about Sarbanes Oxley.
○ Very Relevant ○ Relevant ○ Neutral ○ Irrelevant ○ Very Irrelevant

I have studied Sarbanes-Oxley in my accounting courses.*
Please select the answer below which represents your beliefs about the statement above.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I know what the PCAOB is.*
Select the answer which best describes your beliefs about the statement above.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I am familiar with the requirements of PCAOB Auditing Standard No. 2, "An Audit of Internal Control over
Financial Reporting Performed in Conjunction with an Audit of Financial Statements".*
Select the answer which best describes your beliefs about the statement above.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

[Next]   [Cancel]

22.   Demographic Questions

You are almost done. The next few pages will ask you general questions about you. These questions are designed to find out about you without personally identifying you. They are an important part of this study; please answer the question honestly and to the best of your ability.

What is your gender?
○ Male   ○ Female

Have you worked in the field of accounting?*
○ Yes   ○ No

<div align="center">[Next]   [Cancel]</div>

In which sector of the accounting field did you work?*
○ Auditing
○ Tax
○ Managerial
○ Non Profit
○ Consulting
○ Other, please specify

[   ]

In total, how many years have you worked in the field of accounting?*
Enter the number of years that you have worked in accounting in the box below. This can be in a combination of fields.

[   ]

<div align="center">[Next]   [Cancel]</div>

Appendix B Continued

23.   Possible Covariate Questions: Prior Investment Experience

Have you ever made an investment in the stock market?*
○ Yes   ○ No

Do you plan to invest in the stock market?*
○ Yes   ○ No

Have you ever invested in a mutual fund?*
○ Yes   ○ No

[Next]   [Cancel]

For each of the statements below select the answer that best reflects your beliefs.

I pick which stocks I want to purchase.*
○ Strongly Agree   ○ Agree   ○ Neutral   ○ Disagree   ○ Strongly Disagree

I rely on my broker to tell me which stocks to purchase.*
○ Strongly Agree   ○ Agree   ○ Neutral   ○ Disagree   ○ Strongly Disagree

I only invest in mutual funds*
○ Strongly Agree   ○ Agree   ○ Neutral   ○ Disagree   ○ Strongly Disagree

[Next]   [Cancel]

24.   Theoretical Covariates Based on Appendix A

To what extent do you agree or disagree with the following statements:

I have previously performed tasks similar to the one in this study.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I enjoyed working on the task in this study.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I am confident in my earnings per share predictions.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I knew management wrote the Internal Controls Assessment letter before reading it.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Management was responsible for the memo regarding the results of operations for year one.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Management's forecasts were consistent with my forecast in the direction it predicted earnings.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I expected management to predict positive earnings.*
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

[Next]   [Cancel]

25.   Feedback Screen

Please enter any comments you might have regarding this study. Your comments are very important and will be used to make improvements to this study.

[Done]   [Cancel]

26.   Finished Screen

Survey Completed

Thank you for taking the survey! As stated previously, there is $15 of compensation for participating in this study. Please click the following link to enter a different system to input your information needed for payment.
Click this link to input your information

Please do not discuss this survey with others until you have been told that it is okay to do so.

Please use the link above to continue.

Appendix C: Pilot Study One Surprise Testing

Please rate the following items independently

Industry analysts have predicted earnings per share of XYZ Company at $1.23 per share. Management has issued a forecast predicting earnings per share of $1.35.

Please rate the difference between the analysts' predictions and management predictions:

Insignificant   Very Significant
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```
Not Surprising   Very Surprising
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```

Industry analysts have predicted earnings per share of XYZ Company at $1.55 per share. Management has issued a forecast predicting earnings per share of $1.86.

Please rate the difference between the analysts' predictions and management predictions:

Insignificant   Very Significant
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```
Not Surprising   Very Surprising
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```

Industry analysts have predicted earnings per share of XYZ Company at $1.75 per share. Management has issued a forecast predicting earnings per share of $2.28.

Please rate the difference between the analysts' predictions and management predictions:

Insignificant   Very Significant
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```
Not Surprising   Very Surprising
```
|-----------|-------------|------------|-----------|-----------|------------|
1           2             3            4           5           6            7
```

Appendix C Continued

Industry analysts have predicted earnings per share of XYZ Company at $1.10 per share. Management has issued a forecast predicting earnings per share of $1.54.
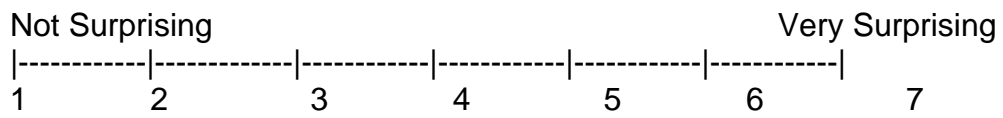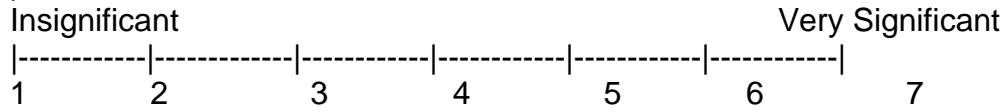
Please rate the difference between the analysts' predictions and management predictions:

Insignificant   Very Significant
|------------|-------------|------------|------------|------------|------------|
1   2   3   4   5   6   7

Not Surprising   Very Surprising
|------------|-------------|------------|------------|------------|------------|
1   2   3   4   5   6   7

About the Author

Robert David Slater Jr. was born in New Haven, Connecticut, the son of Karen and Robert Slater. Robert graduated from Gateway High School in Kissimmee, Florida in 1989 and entered the University of South Florida in Tampa, Florida. In December 1995, he graduated with a Bachelor of Science degree in Business Administration majoring in accounting. He worked as a financial manager for Michael Steinberg and Associates from 1994 until 1999. In August 1999, he entered the College of Business at the University of South Florida, earning his Master's degree in Accountancy (M.Acc.) in 2003 and a PhD in Accounting in 2007. In June of 2000 he married Elizabeth Hemphill. Robert is a licensed CPA in the State of Florida and is currently a faculty member at Texas A&M Corpus Christi.