

Effects of Language Vividness and Explanation Plausibility on Nonprofessional Investors' Reactions to Earnings Warnings

Min Chen

San Francisco State University

Amy Chun-Chia Chang

San Francisco State University

It is increasingly important for managers to make effective corporate disclosures to investors. This study examines investors' reactions to two qualitative features of earnings warnings: (1) vividness of language used in warnings and (2) plausibility of explanations used to explain forecasts. By adopting a 2 × 2 between-subjects experimental design, the authors find that investors forecast lower future performance and judge management as more trustworthy if warnings use vivid rather than pallid language and are accompanied by plausible rather than implausible management explanations. When management explanations are implausible, investors are not significantly affected by either vivid or pallid language.

INTRODUCTION

A substantial body of research reveals that companies that wish to avoid negative earnings surprises tend to disclose bad news voluntarily and in a timely manner (Field, Lowry, & Shu, 2005; Kasznik & Lev, 1995; Skinner, 1994; Smith, 2013; Tucker, 2007, 2010; Vlastelica, 2012). In this study, we refer to this type of investor guidance as *earnings warnings*. Prior literature documents that company managers issue guidance in various forms, such as range, open-ended, qualitative, or accompanied by explanations; these forms of guidance influence investors' reactions and earnings estimates (Baginski, Hassell, & Kimbrough, 2004; Elliott, Hobson, & Jackson, 2011; Han & Tan, 2010; Hutton, Miller, & Skinner, 2003; Libby & Tan, 1999). In this study, we extend research on the effect of the qualitative form of investor guidance. We examine investors' reactions to earnings warnings according to two qualitative features: the *vividness* of the language that companies use to deliver warnings, and the *plausibility* of the explanations that managers use to explain their forecasts.

Although companies communicate financial information to stakeholders in various tones and formats—and advertisers routinely use vivid language—accounting researchers have, until recently, shown limited interest in the effect of language on investors. Hales, Kuang, and Venkataraman (2011) explore the effect of language on investors' decisions by examining how language used in firm-performance news influences investor judgments. They show that when a firm's underlying performance-disclosure tone is negative, vivid-language news results in more negative investor judgments than pallid-language news. However, there are two limitations to Hales et al.'s experimental design: (1) It assumes that vivid-language and pallid-language news excerpts are the only qualitative information available to investors, and (2) it does not account for the *belief-adjustment model* (Hogarth & Einhorn, 1992), that is,

the possibility that investors adjust their judgments as they receive further information. According to the model, investors update their beliefs using a sequential anchoring and adjustment process. Although investors form first impressions by reading earnings news, they may adjust their judgments as additional information arrives. Accordingly, we extend work by Hales et al. (2011) by examining investors' reactions to earnings warnings when companies deliver the warnings in vivid language and when they expose investors to management explanations of their warnings.

Although earnings warnings are not issued in isolation (Waymire, 1984), only a few researchers have explored the nature and effects of management explanations (Baginski et al., 2004; Hutton et al., 2003). They find that investors respond according to the characteristics of management explanations (internal or external, soft talked disclosure or verifiable forward-looking statement). In this study, we further this line of research through a joint examination of management-explanation plausibility and vividness of earnings-warnings language. The belief-adjustment model suggests that investors form initial forecasts when they receive earnings news; they adjust their forecasts when they receive different information or additional details (e.g., vividness of warnings language, management explanations). However, Hogarth and Einhorn (1992) point out that users adjust to new information depending on the sign of the impact of the evidence, the level of the anchor, and their own levels of sensitivity. Because plausible management explanations are more confirmatory than implausible explanations—and thus have more influence on investors' decisions—we hypothesize that investors modify their forecasts only when they receive plausible explanations. Also, according to Nisbett and Ross's (1980) descriptions of language vividness, we hypothesize that investors will only adjust their forecasts if earnings warnings are expressed vividly and perceived as more persuasive. In other words, we predict investors' reactions to earnings warnings will be more negative if the warnings use vivid language and are accompanied by plausible explanations. We also examine how investors assess management trustworthiness under these conditions, with the anticipation that investors' assessments of trustworthiness will be more positive if warnings use vivid language and are accompanied by plausible explanations than if warnings use pallid language.

To test our hypotheses, we conduct a 2×2 between-subjects experiment in which we ask nonprofessional investors to predict earnings growth rates and judge management trustworthiness after reading information about a target company and a benchmark company. We follow Hales et al. (2011) to manipulate the language of the target-company warnings as either vivid or pallid. Afterwards, we characterize the plausibility of management explanations as either plausible or implausible. The results show that investors predict lower future performance and judge company management to be more trustworthy if the investors receive vivid-language warnings rather than pallid-language warnings; however, this effect occurs only when management explanations are plausible. In contrast, when management explanations are implausible, vivid-language warnings do not significantly influence investors' predictions of future performance for firms or their judgments of management trustworthiness. These results suggest that the use of vivid language in earnings warnings increases the direction of investors' sentiments only when they receive plausible explanations for poor performance warnings.

Our study contributes to both research findings and daily business operations. First, at the research level, it provides additional evidence of investors' reactions to earnings warnings. To the best of our knowledge, research in this domain has focused only on investors' reactions to various forms (e.g., points or ranges) or disaggregated levels of quantitative warnings (Elliott et al., 2011; Han & Tan, 2010; Libby & Tan, 1999). Yet a few studies (e.g., Baginski et al., 2004; Hutton et al. 2003) suggest that investors respond to quantitative earnings warnings, as well as to the explanations that accompany the warnings. Our study contributes to this line of research by showing that earnings-warning language and the plausibility of management explanations jointly influence investors' reactions to warnings. Second, our study expands evidence on the importance of linguistic characteristics in influencing investors' judgments and decisions (i.e., Hales et al., 2011). To date, research on linguistic characteristics largely has used archival methods and proxies to represent various characteristics such as tone changes, "soft" and "hard" information, and readability (Demers & Vega, 2008; Feldman, Govindaraj, Livnat, & Segal, 2010; Li, 2008, 2010; Lucca & Trebbi, 2009). Proxies are generated mostly from commonly used dictionary software, and there are doubts about whether this software effectively measures linguistic characteristics

associated with financial reporting (Li, 2010). Because many of the proxies are based on the numbers of negative or positive words identified by dictionary software, they do not fully represent language-related conceptual constructs (Hales et al., 2011). In contrast, the experimental method operationalizes language-related constructs to better capture the effect that linguistic characteristics have on investors. However, such research using the experimental method has been limited. By extending work by Hales et al. (2011), our study investigates how vivid earnings-warning language and other qualitative forms of information simultaneously affect investors' judgments. Vivid language not only influences investors' forecasts of future performance but also improves investors' judgments of management trustworthiness. Third, this study adds to literature on management explanations since research has been limited on how investor responses to management explanations affect future earnings forecasts. Whereas Barton and Mercer (2005) and Cianci and Kaplan (2010) focus on the effect of management-explanation plausibility on firms' current performance, we assess the relationship between plausibility and management's predictions of future firm performance. Such predictions are important, because these types of disclosures are discretionary and can have significant impacts on how information users predict future firm performance.

At a practical level, our study provides guidance for managers on how to announce earning warnings. If managers use vivid language to announce warnings and accompany the warnings with plausible explanations, investors expect a more negative earnings growth rate but will regard the managers as more trustworthy. Thus, the use of vivid language to announce earning warnings is a double-edged sword; when crafting disclosures, managers should weigh the benefits of improved reputation against the costs of falling stock prices. Our results also provide practical implications regarding the use of external explanations to explain predicted future performance. Investors may perceive management explanations of predicted performance to be more discretionary than those of current performance. As a result, their responses to the plausibility of such explanations of predicted performance may not be the same as the responses to explanations of current performance observed by Barton and Mercer (2005) and Cianci and Kaplan (2010).

In the following section, we review literature that uses both archival and experimental methods to study language characteristics. Next, in the context of psychological theory, we present our hypotheses about the individual and joint effects of vivid language and management-explanation plausibility on investors' judgments. We then describe the operationalization of our experiment and present our results and conclusions.

LITERATURE REVIEW

Earnings Warnings

According to prior research, companies often seek to improve their reputations and reduce litigation risks (e.g., Field et al., 2005; Kasznik & Lev, 1995; Skinner, 1994; Tucker, 2010) by issuing short-horizon earnings guidance (i.e., earnings warnings) before revealing surprisingly negative earnings. Specific features of earnings warnings can influence investors' reactions. For example, Libby and Tan (1999) find that if a company issues an adverse earnings warning, analysts judge its managers to have higher integrity and predict that its earnings decline will be less persistent than when the company does not issue a warning. Moreover, they show that analysts' reactions are less negative if warnings and actual earnings announcements are released simultaneously rather than sequentially. Han and Tan (2010) find that the forecast form (point vs. range) influences investors' responses to negative earnings forecasts, such that investors forecast lower earnings per share for a company if its managers provide a range forecast than if they provide a point forecast. Elliott et al. (2011) find that disaggregation levels of unfavorable earnings forecasts influence investors' judgments. Specifically, investors judge the attractiveness of investment in a company to be lower if they observe a disaggregated management forecast (earnings and its components) than if they observe an aggregated forecast (earnings only).

Vividness of Language

Psychological studies investigate the influence of language vividness on people's information processing. Vivid language "excites the imagination to the extent that it is (a) emotionally interesting, (b) concrete and imagery-provoking, and (c) proximate in a sensory, temporal, or spatial way" (Nisbett & Ross, 1980). Information expressed in vivid language is more persuasive and has a stronger impact on judgments than information expressed in pallid language (Nisbett & Ross, 1980). Hales et al. (2011) provide evidence that vividness matters in accounting contexts. The authors use vivid-language and pallid-language news flashes about real Standard & Poor's (S&P) 500 firms and ask investors to forecast firms' future earnings growth rates. They find that investors are sensitive to the differences between vivid and pallid language when the underlying information is inconsistent with their preferences. When receiving preference-consistent information, investors are relatively insensitive to the vividness of information.

Plausibility of Management Performance Explanations

Managers usually provide explanations about their companies' current and predicted future performance (e.g., Baginski et al., 2004; Bettman & Weitz, 1983; Hutton et al., 2003; Staw, McKechnie, & Puffer, 1982). Some explanations are internal, attributing performance to internal reasons—such as strategies—that are under the company's control. Others are external, correlating performance to external adverse events—such as the overall economy or natural disasters—that are beyond its control. If both current performance and predicted performance are poor, management usually provide external explanations (e.g., Baginski et al., 2004; Bettman et al., 1983; Hutton et al., 2003; Staw et al., 1982). Barton and Mercer (2005) and Cianci and Kaplan (2010) use experimental settings to examine the plausibility of management explanations. Specifically, Barton and Mercer (2005) test management explanations of temporarily poor current performance as plausible or implausible. They find that plausible explanations or disclosures result in higher earnings forecasts and stock valuations by analysts than no explanations and that implausible explanations lead to lower earnings forecasts than no explanations. Barton and Mercer (2005) predict that plausible (implausible) performance explanations improve (harm) company reputations. Cianci and Kaplan (2010) confirm that implausible explanations harm reputation. In examining how explanation plausibility interacts with CEOs' preexisting reputations to influence nonprofessional investors' judgments, they find that plausible explanations do not affect investors' judgments of companies' future performance or reputations if the preexisting reputations are favorable, but they do affect investors' judgments when CEOs' preexisting reputations are unfavorable.

Earnings Warnings (Voluntary Disclosures) and Company Reputation

According to Skinner (1994), managers may also have reputational incentives to preempt negative earnings news. Firms that fail to warn then may be less likely to be followed by financial analysts. Tucker (2010) extends this reasoning by testing changes in the analysts who follow firms, after their failure to warn. Among firms with similar reputations for disclosure, those that fail to warn suffer a significant decrease in the number of analysts that follow them, relative to those that warn. Beyer and Dye (2012) show that strategic managers can build reputations for being forthcoming by disclosing even the most negative forecasts. Landgraf and Riahi-Belkaoui (2003) investigate the link between the overall quality of firms' disclosures and their corporate reputations. They suggest that corporate audiences construct a reputation for firms by interpreting information signals about the quality of those firms' corporate disclosures. Cao, Cassell, Myers, and Omer (2017) find that earnings forecasts issued by more reputable companies, which have been selected to *Fortune's* "World's Most Admired Companies" list, are more accurate than those of less reputable companies.

Taken together, these findings are consistent with the theory that withholding bad news damages companies' reputations for being transparent about forward-looking earnings news. In our examination of how the language used in earnings warnings and the accompanying explanations of warnings influence investors' perceptions, the effect of trustworthiness/reputation of the management may be one of the hidden factors that forms the information user's decision making matrix.

HYPOTHESES DEVELOPMENT

In their pioneering study of language vividness in financial reporting, Hales et al. (2011) observe that vivid language in news flashes has an effect only when investors receive selected financial information. However, investors frequently rely on additional sources of information about firms, including management explanations. Thus, we examine whether management-explanation plausibility interacts with the vividness of earnings-warnings language to affect investors' forecasts of firms' future performance.

According to the belief-adjustment model (Hogarth & Einhorn, 1992), people update their beliefs using a sequential anchoring and adjustment process. They form first impressions of certain events or subjects and continuously adjust their opinions as more information is introduced. According to this model, when investors receive warnings of a firm's poor performance, their anchoring reasoning is that the firm's future performance will be poor. Thus, they forecast a low-earnings growth rate.

Investors may adjust their forecasts when they are presented with management explanations. However, such adjustments will depend on the plausibility of the explanations. Predictions about investors' reactions to plausible versus implausible explanations vary. Empirical studies provide some evidence for the belief that implausible external explanations lead investors to make negative inferences about a firm's prospects (Barton & Mercer, 2005; Cianci & Kaplan, 2010; McKenzie, Lee, & Chen, 2002). However, investors may be insensitive to new information and simply ignore implausible management explanations; specifically, according to Hogarth and Einhorn (1992), "the weight of the adjustment will depend on both the sign of the impact of the evidence as well as the level of the anchor" (p. 14) and people's sensitivity to new information "will decline in a long series of evidence items as information accumulates and as people become more firmly committed to their beliefs" (p. 15). In our study context, if investors forecast poor firm performance based on earnings warnings, further modifications of their forecasts will depend on the impact of, and their sensitivity to, the new information (i.e., management-explanation plausibility). In the implausible-explanation condition, investors are not sensitive to new information, because the information is not trustworthy or reasonable, and they do not modify their forecasts significantly. In the plausible-explanation condition, investors are sensitive to new information because of its plausibility. Moreover, investors can confirm their initial low forecasts of firm performance with the plausible explanations and adjust their forecasts of future performance accordingly.

According to the findings of Nisbett and Ross (1980), namely, that vivid-language information is more persuasive and has a stronger impact on judgments than pallid-language information, we also predict that investors' forecasts will be significantly influenced by warnings if the language of the warnings is vivid rather than pallid. We posit the following:

H1: Investors' forecasts of a firm's future performance are more negative only when investors receive vivid-language warnings accompanied by plausible management explanations.

Prior research suggests that managers are incentivized to issue earnings warnings to improve their reputations (Tucker, 2010). Therefore, we also examine whether language vividness and explanation plausibility influences investors' judgments of management trustworthiness. Although Hales et al. (2011) do not study the association between the language vividness of earnings warnings and management trustworthiness, both Barton and Mercer (2005) and Cianci and Kaplan (2010) examine the argument that management-explanation plausibility influences assessments of management trustworthiness. The authors find that investors are more likely to judge management as less trustworthy if management explanations are implausible than if they are plausible. According to the belief-adjustment model and our H1 rationale, we predict that investors will not exhibit sensitivity to implausible management explanations by adjusting their assessments of management trustworthiness but will do so to plausible management explanations, such that they will judge management as more trustworthy. We also predict that investors' assessments of management trustworthiness change when warnings are presented in vivid, rather than pallid, language. This reasoning leads to our second hypothesis:

H2: Investors judge management as more trustworthy when the investors receive vivid-language warnings accompanied by plausible management explanations.

EXPERIMENTAL PROCESS

Experimental Overview and Design

We employed a 2×2 between-subjects design to examine how the vividness of earnings-warning language interacts with the plausibility of management explanations to influence investors' forecasts and judgments. We recruited undergraduate students as proxies for nonprofessional investors, because students with accounting and investing knowledge are appropriate participants in experiments that examine the judgments of general or novice investors (see Libby, Bloomfield, & Nelson, 2002). A total of 66 students from undergraduate accounting classes participated in the study. Of these participants, 54 percent were men, and their mean work experience was 4.4 years. Participants on average had completed 3.8 accounting courses and 1.2 finance courses, with 14 percent reporting experience in buying and selling company stocks. Of the participants who were not investing at the time of the experiment, 52 percent planned to invest within the next 5 years. Previous investing experience did not significantly influence participants' forecasts or judgments.

Our experiment began with instructions that included the introduction of the tasks and description of participant incentives: 5 extra course credits for voluntary participation in the study; compensation of up to \$6 each, depending on the accuracy of their forecasts (calculated as the absolute value of the difference between each participant's forecast and the actual earnings growth for the target company's fourth quarter [Q4] of 2011); and compensation of \$6, \$4, \$2, or \$0 if the accuracy of their forecasts fell in the first, second, third, or fourth quartile of all forecasts. Participants then answered questions to ensure they understood the requirements of the study.

Next, we provided participants with non-numerical and numerical information about a S&P 500 firm in the telecommunication industry, which we renamed "Alpha." We also provided similar information on a benchmark firm, which we named "Beta." We described Beta as a peer firm in the telecommunication industry, with business models and earnings performance similar to Alpha. To strengthen the manipulation of both linguistic vividness and explanation plausibility, we provided the information on Beta to form a contrast with information on Alpha (the target company). Our design increased the generalizability of our conclusions by replicating the decision-making environment of investors, who usually compare firms before coming to final decisions.

After participants read the information about Alpha and Beta, we asked them to forecast Alpha's growth rate for Q4 of 2011 on a scale of 0%–100% and judge the trustworthiness of Alpha's management on a scale of 0–6. Participants then answered manipulation questions.

TABLE 1

2 × 2 EXPERIMENTAL DESIGN (ALPHA = TARGET GROUP, BETA = CONTROL GROUP)

	Vivid	Pallid
Plausible Explanation	<p>Alpha is located in North Carolina.</p> <p>Warning language: Emphasizing the negative impact of Hurricane Irene, which slammed the East Coast during August 20 to August 28, 2011; the CEO said that Alpha would be in an uncharted territory.</p>	<p>Alpha is located in North Carolina.</p> <p>Warning language: Alpha's management expressed concerns about the negative impact of Hurricane Irene, which hit the East Coast during August 20 to August 28, 2011. The CEO said that Alpha was still in an uncertain environment in the fourth quarter of 2011.</p>

	Beta is located in Pennsylvania Warning language: Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.	Beta is located in Pennsylvania. Warning language: Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.
Implausible Explanation	Alpha is located in Arizona. Warning language: Emphasizing the negative impact of Hurricane Irene, which slammed the East Coast during August 20 to August 28, 2011; the CEO said that Alpha would be in an unchartered territory. Beta is located in Pennsylvania. Warning language: Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.	Alpha is located in Arizona. Warning language: Alpha's management expressed concerns about the negative impact of Hurricane Irene, which hit the East Coast during August 20 to August 28, 2011. The CEO said that Alpha was still in an uncertain environment in the fourth quarter of 2011. Beta is located in Pennsylvania Warning language: Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.

Non-numerical Information about Alpha and Beta

Participants received non-numerical information about Alpha and Beta, including the companies' business backgrounds, as well as news excerpts about the companies from a well-known financial press source. The business backgrounds of Alpha and Beta provided information about the location and service areas of each company; we manipulated the information to reflect whether management's explanations in their warnings were plausible or implausible. In the news excerpts, we provided information about the firms' poor performances for the current quarter, management warnings of their Q4 performance, and management explanations for their predicted poor performance.

We adapted four of five news excerpts used by Hales et al. (2011) to manipulate vivid-language and pallid-language versions of Alpha's warnings. The Beta warnings contained the same information, with pallid language, in all conditions. Thus participants in the vivid conditions received the following information as a part of the warnings, for example:

Alpha (vivid version): Emphasizing the negative impact of Hurricane Irene, which slammed the East Coast during August 20 to August 28, 2011, the CEO said that Alpha would be in an unchartered territory.

Beta (pallid version): Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.

In contrast, participants in the pallid condition received the following information in their warnings:

Alpha (pallid version): Alpha's management expressed concerns about the negative impact of Hurricane Irene, which hit the East Coast during August 20 to August 28, 2011. The CEO said that Alpha was still in an uncertain environment in the fourth quarter of 2011.

Beta (pallid version): Beta's management acknowledged the uncertainties and said that the negative impact of Hurricane Irene on its services made forecasting a challenge.

To manipulate the plausibility of management explanations for predicted performance in two conditions (plausible and implausible), we adopted the approaches used by Barton and Mercer (2005) and Cianci and Kaplan (2010). We followed Cianci and Kaplan (2010) to manipulate the plausibility of management's explanations for its predicted Q4 performance in two conditions (plausible and implausible). We also adopted Barton and Mercer's (2005) approach, which allowed us to vary the plausibility of explanations while holding constant all other information about the firm and its prospects. In all conditions, both Alpha and Beta warned investors about possible declines in their Q4 earnings for 2011 and attributed the predicted performance to Hurricane Irene. Hurricane Irene hit East Coast areas in August 2011 (i.e., end of the current quarter); we adapted our explanation from the actual management discussion and analysis of Alpha. In the plausible-explanation condition, Alpha's business background indicated that the company was headquartered in North Carolina, serving several states on the East Coast, including North Carolina, South Carolina, Virginia, District of Columbia, Maryland, and New York. Given that Alpha's service areas were close to Hurricane Irene, the impact of the hurricane was a plausible explanation for the potential decline of Alpha's earnings in Q4 of 2011. In contrast, in the implausible-explanation condition, Alpha's business background indicated that the company was headquartered in Arizona, serving several states in the Southwest, including Arizona, Nevada, Utah, and New Mexico. In this scenario, given that Alpha's service areas were far from Hurricane Irene, the impact of the hurricane was an implausible explanation for the potential decline of Alpha's earnings in Q4 of 2011. In the control group, we designed Beta to be headquartered in Pennsylvania, where it provided telephone, Internet, and cable television services to the Northeast, including New York, Pennsylvania, Delaware, and New Jersey. Thus, Beta's management explanations were plausible.

Numerical Information

Following the design of Hales et al. (2011), we presented participants with numerical information after presenting them with non-numerical information. The numerical information included selected financial numbers from Alpha's and Beta's financial statements for the last four quarters, as well as the average and range of analysts' forecasts of Q4 earnings growth rate for the companies. For example, the average analysts' forecast for Alpha's Q4 growth rate was -10.29%, and growth forecasts ranged from -29.87% to 4.08%. Similar to Hales et al. (2011), we provided numbers to help participants generate required forecasts for Alpha's Q4 earnings growth rate. To ensure comparable forecasts, we gave all participants the same numbers, though doing so may have decreased the effects of vivid language and plausibility on investors.

Results

Manipulation and Other Checks

We asked participants to complete a few verification questions, to ensure that our manipulations of the vividness of warnings language and the plausibility of management explanations were successful. We manipulated vividness by varying the language used in Alpha's warnings to be vivid or pallid. To test this manipulation, we asked participants to indicate, on a scale of 0–7, how vivid Alpha's warning was compared with Beta's (7 = "Alpha is more vivid compared to Beta"). A one-way analysis of variance (ANOVA) showed that the average rating in the vivid conditions was 4.41, whereas the average rating in the pallid conditions was 3.75. The two means were significantly different ($p = 0.072$), indicating that our manipulation of the vividness was successful.

We manipulated plausibility by varying the explanation provided by Alpha's management as plausible or implausible. To test whether this manipulation was successful, we asked participants to indicate, on a scale of 0–7, how plausible Alpha's management explanation was compared with Beta's (7 = "Alpha's explanation is more plausible compared to Beta's explanation"). Another one-way ANOVA showed that the average rating of Alpha's management explanation in the plausible conditions was 4.84, which was significantly different from the average rating of 4.09 in the implausible conditions ($p = 0.069$). Thus, our experimental manipulation of the plausibility factor was successful.

Test of H1

In H1, we predicted that participants' earnings growth forecasts would be more negative in the vivid-language and plausible-explanation conditions. To test H1, we first conducted an ANOVA with language vividness and explanation plausibility as the independent variables and participants' earnings growth forecasts as the dependent variable. Table 2, Panel B, presents the results. The ANOVA result does not show a significant interaction ($F = 0.259, p = 0.307$). Instead, there is a significant main effect of vividness on participants' earnings forecasts ($F = 3.362, p = 0.036$). Next, we conducted planned comparisons to clarify the effect of vividness. The results, reported in Table 2, Panel C, show that language vividness has a significant effect on participants' earnings growth forecasts in the plausible-explanation condition ($F = 3.143, p = 0.043$) but no significant effect for the implausible explanation ($F = 0.779, p = 0.192$). Investors forecast lower future performance if they receive vivid-language warnings rather than pallid-language warnings, but the effect exists only when management explanations are plausible. These results are consistent with the belief-adjustment model and H1, which assert that investors tend to ignore implausible management explanations. The results also show that the addition of vivid language does not improve the effectiveness of management explanations.

TABLE 2
TEST OF H1: PARTICIPANTS' EARNINGS GROWTH FORECASTS
Panel A: Descriptive

		Vividness of News Language		
Explanation				Mean
Plausibility		Vivid	Pallid	(SD)
Plausible		-6.40%	-0.52%	-3.55%
		10.65%	8.14%	9.83%
		n = 17	n = 16	n = 33
Implausible		-2.43%	0.89%	-0.82%
		7.72%	13.35%	10.78%
		n = 17	n = 16	n = 33
Mean				
(S.D.)		-4.41%	0.19%	
		9.38%	10.90%	
		n = 34	n = 32	

Panel B:					
Conventional ANOVA					
Source	Sum of Squares	df	Mean Square	F-Statistic	p-Value
Vividness	349.029	1	349.029	3.362	0.036
Explanation					
Plausibility	119.072	1	119.072	1.147	0.144
Vividness*					
Explanation					
Plausibility	26.862	1	26.862	0.259	0.307
Error	6436.097	62	103.808		

Panel C: Planned Contrasts

	Sum of Squares	Df	Mean Square	F-Statistic	p-Value
Effect of warnings' language vividness in plausible-explanation condition		1	284.774	3.143	0.043
Effect of warnings' language vividness in implausible-explanation condition		1	91.117	0.779	0.192

Notes: Participants were asked to forecast Alpha's growth rate for Q4 of 2011 on a scale of 0%–100%.

Test of H2

In H2 we predicted that participants' judgments of management trustworthiness would be higher in the vivid-language and plausible-explanation conditions. To test H2, we first conducted an ANOVA with language vividness and explanation plausibility as the independent variables and participants' judgments of management trustworthiness as the dependent variable. Table 3, Panel B, presents the results. The ANOVA result does not show a significant interaction ($F = 0.994, p = 0.162$). Instead, there is a significant main effect of vividness on participants' judgments of management trustworthiness ($F = 4.755, p = 0.017$). Next, we conducted planned comparisons to specify the effect of vividness. The results, reported in Table 3, Panel C, show that vivid language has a significant effect on participants' judgments of trustworthiness in the plausible-explanation condition ($F = 7.753, p = 0.005$) but no effect in the implausible-explanation condition ($F = 0.243, p = 0.313$). These results establish that investors judge management as more trustworthy if they receive vivid-language warnings rather than pallid-language warnings, but the effect exists only when management explanations are plausible. In contrast, when managers provide implausible explanations, the language of warnings does not significantly influence investors' judgments of management trustworthiness.

TABLE 3
TEST OF H2: PARTICIPANTS' JUDGMENTS OF MANAGER TRUSTWORTHINESS
Panel A: Descriptive

Explanation Plausibility	Vividness of News Language		Mean (SD)
	Vivid	Pallid	
Plausible	4.81	3.62	4.22
	1.047	1.31	1.313
	n = 16	n = 16	n = 32
Implausible	4.35	4.06	4.21
	1.766	1.611	1.673
	n = 17	n = 16	n = 33
Mean (S.D.)	4.58	3.84	
	1.458	1.462	
	n = 33	n = 32	

Panel B:

Conventional ANOVA					
Source	Sum of Squares	df	Mean Square	F-Statistic	p-Value
Vividness	8.683	1	8.683	4.755	0.017
Explanation					
Plausibility	0.028	1	0.028	0.015	0.452
Vividness*Explanation					
Plausibility	1.815	1	1.815	0.994	0.162
Age	8.897	1	8.897	4.873	0.016
Familiarity	10.084	1	1.826	5.523	0.011
Error	107.733	59	103.808		

Panel C: Planned Contrasts

	Sum of Squares	df	Mean Square	F-Statistic	p-Value (two-tailed)
Effect of warnings' language vividness in plausible-explanation condition		1	10.706	7.753	0.005
Effect of warnings' language vividness in implausible-explanation condition		1	0.695	0.243	0.313

Notes: Participants were asked to judge the trustworthiness of Alpha's management on a scale of 0–6, with 0 being not trustworthy and 6 being very trustworthy.

CONCLUSIONS

This study provides experimental evidence of the effects of the language vividness of earnings warnings and the plausibility of management explanations of predicted performance on investors' reactions. The results show that investors predict lower future performance and judge management as more trustworthy if they receive vivid-language warnings accompanied by plausible explanations. In contrast, when management explanations are implausible, investors' predictions of future firm performances and their judgments of management trustworthiness are not significantly influenced by the format of the warnings. These results suggest that language vividness produces larger swings in investor sentiment when investors receive plausible explanations for potential poor performance.

This study extends literature in three research streams. First, it adds to research on earnings warnings by providing evidence of the effect of two qualitative features of warnings on investor reactions. Our results indicate that the language vividness of earnings warnings and plausibility of management explanations can influence investors' reactions to earnings warnings. Second, our study provides more evidence of the importance of linguistic characteristics in influencing investors' judgments and decisions. By extending Hales et al.'s (2011) work, our study reveals how the linguistic vividness of earnings warnings and other qualitative information jointly affect investors' judgments of performance expectations and management trustworthiness. Third, this study adds to literature on management explanations. It shows that language vividness is influential only when managers provide plausible explanations for predicted future performance. It illustrates the value and influence of communication:

Given settings that are proper and sources that are reliable, investors form appropriate understandings of earnings warnings. Such communications can have significant impacts on investors, and intentional efforts devoted to such correspondence can pay dividends to companies.

This study has several limitations that may suggest research avenues. First, by using an experimental case, we may have omitted information that is potentially relevant to investors. We focused on only two qualitative features of earnings warnings and provided participants with limited background and financial information. Because investors' reactions to earnings warnings are influenced by other kinds of numerical information or qualitative features, additional research could examine whether and how language vividness or explanation plausibility interact with omitted information to influence investors' judgments. Second, because our study uses undergraduate accounting students to proxy for nonprofessional investors, it is uncertain whether our results can be generalized to investors who have more investment experience and knowledge. Further research could examine the effect of the two qualitative features of earnings warnings on more experienced investors. Third, though our study adopts prior research methods (e.g., Barton & Mercer, 2005; Cianci & Kaplan, 2010; Hales et al., 2011) to manipulate language vividness and explanation plausibility, these two features can be manipulated in other ways. Continued research could measure these features in other practice-relevant ways.

REFERENCES

- Baginski, S. P., Hassell, J. M., & Kimbrough, M. (2004). Why do managers explain their earnings forecasts? *Journal of Accounting Research*, 42, (1), 1–29.
- Barton, J. & Mercer, M. (2005). To blame or not to blame: Analysts' reactions to external explanations for poor financial performance. *Journal of Accounting and Economics*, 39, (3), 509–533.
- Bettman, J. R. & Weitz, B. A. (1983). Attributions in the boardroom: Causal reasoning in corporate annual reports. *Administrative Science Quarterly*, 28, (2), 163–183.
- Beyer, A. & Dye, R. A. (2012). Reputation management and the disclosure of earnings forecasts. *Review of Accounting Studies*, 17, (4), 877–912.
- Cao, Y., Cassell, C. A., Myers, L. A. & Omer, T. C. (2007). Does company reputation matter for voluntary disclosure quality? Evidence from management earnings forecasts. Available at SSRN: <https://ssrn.com/abstract=2034378> or <http://dx.doi.org/10.2139/ssrn.2034378>
- Cianci, A. M. & Kaplan, S. E. (2010). The effect of CEO reputation and explanations for poor performance on investors' judgments about the company's future performance and management. *Accounting, Organizations and Society*, 35, (4), 478–495.
- Demers, E. & Vega, C. (2008). *Soft information in earnings announcements: News or noise?* (Faculty & Research Working Paper). INSEAD Working Paper No. 2010/33/AC.
- Elliott, W. B., Hobson, J. L. & Jackson, K. E. (2011). Disaggregating management forecasts to reduce investors' susceptibility to earnings fixation. *The Accounting Review*, 86, (1), 185–208.
- Field, L., Lowry, M. & Shu, S. (2005). Does disclosure deter or trigger litigation? *Journal of Accounting and Economics*, 39, (3), 487–507.
- Fiske, S. T. & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.
- Feldman, R., Govindaraj, S., Livnat, J. & Segal, B. (2010). Management's tone change, post earnings announcement drift and accruals. *Review of Accounting Studies*, 15, (4), 915–53.
- Hales, J., Kuang, X. & Venkataraman, S. (2011). Who believes the hype? An experimental examination of how language affects investor judgments. *Journal of Accounting Research*, 49, (1), 223–255.
- Han, J. & Tan, H. T. (2010). Investors' reactions to management earnings guidance: The joint effect of investment position, news valence, and guidance form. *Journal of Accounting Research*, 48, (1), 123–146.
- Hogarth, R. M. & Einhorn, H. J. (1992). Order effects in belief updating: The belief-adjustment model. *Cognitive Psychology*, 24, (1), 1–55.
- Hutton, A. P., Miller, G. S. & Skinner, D. J. (2003). The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research*, 41, (5), 867–890.
- Kasznik, R. & Lev, B. (1995). To warn or not to warn: Management disclosures in the face of an earnings surprise. *The Accounting Review*, 70, (1), 113–34.
- Landgraf, E. & Riahi-Belkaoui, A. (2003). Corporate disclosure quality and corporate reputation. *Review of Accounting and Finance*, 2, (1), 86–95, doi: 10.1108/eb027003
- Libby, R., Bloomfield, R. & Nelson, M. W. (2002). Experimental research in financial accounting. *Accounting, Organizations and Society*, 27, 775–810.
- Libby, R. & Tan, H. T. (1999). Analysts' reactions to warnings of negative earnings surprises. *Journal of Accounting Research*, 37, (2), 415–435.
- Li, F. (2008) Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics*, 45, (2–3), 221–47.
- Li, F. (2010). The information content of forward-looking statements in corporate filings—A naive Bayesian machine learning approach. *Journal of Accounting Research*, 48, (5), 1049–1102.
- Lucca, D. O. & Trebbi, F. (2009). *Measuring central bank communication: An automated approach with application to FOMC statements*. (NBER Working Paper w15367).
- McKenzie, C., Lee, S. & Chen, K. (2002). When negative evidence increases confidence: Change in beliefs after hearing two sides of a dispute. *Journal of Behavioral Decision Making*, 15, 1–18.

- Nisbett, R. & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment*. Englewood Cliffs, NJ: Prentice Hall.
- Skinner, D. J. (1994). Why firms voluntarily disclose bad news. *Journal of Accounting Research*, 32, (1): 38–60.
- Smith, A. (2013, January 27). Profit warnings highest since 2008. *Financial Times*. Retrieved from <http://www.ft.com/intl/cms/s/0/14699bf0-67cd-11e2-a4a9-00144feab49a.html#axzz2JVhLiUbT>
- Staw, B., McKechnie, P. & Puffer, S. (1983). The justification of organizational performance. *Administrative Science Quarterly*, 28, (4), 290–312.
- Tucker, J. W. (2007). Is openness penalized? Stock returns around earnings warnings. *The Accounting Review*, 82, (4), 1055–1087.
- Tucker, J. W. (2010). Is silence golden? Earnings warnings and subsequent changes in analyst following. *Journal of Accounting, Auditing & Finance*, 25, (3), 431-456.
- Vlastelica, R., (2012, June 21), Analysis-Big-name profit warnings worsen earnings outlook. *Chicago Tribune*, Retrieved from http://articles.chicagotribune.com/2012-06-21/business/sns-rt-companyprofitwarnings11e8hl91m-20120621_1_profit-outlook-earnings-outlook-profit-view
- Waymire, G. (1984). Additional evidence on the information content of management earnings forecasts. *Journal of Accounting Research*, 22, (2), 703–718.