

# The Deaf Effect Response to Bad News Reporting in Information Systems Projects<sup>1</sup>

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## **ABSTRACT**

*Project escalation is known to frequently occur in the context of information systems (IS) projects. The reluctance to hear bad news—a phenomenon that has been labelled the “deaf effect”—has been suggested as a possible reason for why projects are allowed to escalate for as long as they sometimes do. The deaf effect response to bad news reporting has received little research attention, yet may account for many cases of project escalation. The research reported here provides a description of conditions under which the deaf effect is likely to occur. Hypotheses regarding factors involved in causing the deaf effect are articulated based on Miceli and Near’s theory of whistle blowing effectiveness and further elaborated using insights from the cognitive psychology literature of decision-making. The hypotheses were then tested experimentally using a role-playing experiment. Results suggest that when a decision maker perceives a relevant message, s/he is willing to de-escalate the project. Bad news reporter credibility and the gender of the bad news reporter were found to be key factors in the determination of message relevance.*

**Keywords:** *Project management, Decision making, Bad news reporting, Escalation of commitment, Deaf effect*

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## INTRODUCTION

Information systems project failures typically exhibit ample warning signs of impending failure, but for reasons that are not well understood, these warning signs are frequently ignored. In many cases, there are team members or even a single individual that seek to call attention to critical issues and ask for a delay or change of course in the project direction. In those cases, it is important to know why senior management did not heed the "bad news reporter" who warned them that the project was in danger of failing. This failure to heed the bad news reporter has been called the "deaf effect" (Keil et al., 2001).

The information systems discipline is rife with this phenomenon. For example, the UK Child Support Agency recently spent 456 million GBP on a new system. During the development period it received 70 audits of which 70% had identified serious concerns. Yet it was delivered with 52 critical defects and, three years after delivery, productivity has fallen from pre-implementation levels and the staff has to use 600 workarounds (Computer.Business.Review, 2006). In the famous Providian Trust case (McFarlan et al., 1997), an internal auditor attempted to signal serious issues with a project and ended up getting fired for his trouble. The system went on to fail spectacularly.

Failures involving the deaf effect represent a serious problem, and this is an understudied area. Only one IS study has discussed this failure to respond. While Keil and Robey (2001) have demonstrated that the deaf effect does occur, no study has yet investigated how or why this effect occurs. The research question that we seek to investigate is "What are some of the causal factors that create the deaf effect?"

In this research, we propose that credibility of the bad news reporter affects the decision process behind the response to bad news reporting. This proposition is tested by means of a laboratory experiment. The next section of the paper provides a brief overview of relevant literature on whistle-blowing, bad news reporting, and decision-making, along with the hypotheses to be tested. Then, we introduce the experimental design, present the results of the study, and briefly discuss its implications.

## LITERATURE REVIEW

A review of the literature reveals that only one publication (Keil et al., 2001) has dealt with the deaf effect in information systems project management. Keil and Robey (2001) described the "deaf effect" as a failure to respond to messages of impending project failure. Based on a survey of internal auditors, they demonstrated that the deaf effect exists in IS project management situations. The auditors surveyed recounted instances in which they had reported bad news about projects only to find that their concerns were ignored by senior management.

Without an existing literature or theory base that bears directly on this phenomenon, we review reference theories from management and cognitive psychology that can be used to construct hypotheses regarding factors that may promote the deaf effect. In this section, we

examine the literature related to whistle-blowing effectiveness, and decision-making theory which can be used to inform a model of the deaf effect response to bad news reporting.

### **Near and Miceli's Model of Whistle-Blowing Effectiveness and the Deaf Effect**

Whistle-blowing as used by Near and Miceli is defined as "the disclosure by organization members (former or current) of illegal, immoral or illegitimate practices under the control of their employers, to person or organization that may be able to affect action" (Miceli et al., 2002, p. 456). In the IT project context, the bad-news reporter is not necessarily disclosing illegal or immoral practices, but rather the fact that they believe that the present direction of the project is a failing course of action. The question then arises as to whether this literature has appropriate bearing upon consideration of the deaf effect.

We hold that the two phenomena are sufficiently similar to allow us to use the whistle blowing literature to inform our study. While in the case of the deaf effect, nothing illegal is being disclosed, the reporter is disclosing what s/he perceives to be a failing course of action that is not being addressed by the project leadership. This failing course of action is similar to illegitimate acts when sponsored by management because although management has endorsed the project, continuing a failing course of action is inappropriate and represents a waste of corporate resources. Reporters of bad news also face pressures similar to those of whistle-blowers. Whistle-blowers of illegal activities find that disclosure of the problem is a high risk activity and thus are reluctant to report (Miceli et al., 1992; Miceli et al., 1991). Reporters of bad news in projects perceive reporting similarly (Keil et al.; 2001, Smith et al., 2001). Thus we find that bad news reporting is conceptually similar to whistle-blowing.

Near and Miceli (1995) describe a model of whistle-blowing effectiveness. They argue that the effectiveness of whistle-blowing is based on the personal characteristics (credibility and power) of the whistle-blower and the complaint recipient, moderated by the support for the whistle-blower and the wrongdoer as well as situational and organizational characteristics of the wrong-doing. They describe credibility as being composed of the indicators of the whistle-blower's perceived motives, ability to convince others of their correctness, trustworthiness and power as the whistle-blower's status, position in the hierarchy, and perceived value to the organization. Thus a well-respected whistle-blower in a position of power will be more effective than one who has little standing and resides in the lower echelons of the organization.

Near and Miceli (1995) further proposed that characteristics of the wrongdoing and the organization also have an effect on the organizational response. If the organization has been dependent on the form of wrongdoing, or there is little evidence or legal basis for complaint about the wrongdoing, the organization's willingness to change will be lower. Conversely, if the organization looks favorably on whistle blowing and is less

bureaucratic, their willingness to change will be higher. From the standpoint of the deaf effect, this seems to indicate that the deaf effect would be more likely to occur when the decision maker is dependent upon continuance of the current course of the project to maintain his/her organizational status or reputation.

### **Cognitive Psychological Theories of Decision-making**

Since the deaf effect response is a failure of the decision making process, an examination of decision-making theory is appropriate for building a theory of its causation. In this section, we examine the cognitive psychology behind decision-making to investigate the factors that come into play when a decision is made.

There are many different psychological theories of decision-making. However, current theory in this area suggests that decision-making can be regarded as a two-step process (Evans, 1984; Evans, 1989; Kahneman, 2003; Stanovich et al., 1998, pp. 309–310). These theories hold that the two-step process arose due to the vast amount of data available to a decision maker. In any non-trivial problem, finding a solution requires searching through a vast number of possible solution paths. Thus, humans are confronted daily with more information than can possibly be processed. To handle this onslaught of data effectively, they developed heuristic processes to conserve their scarce processing power. And when one does think about these selected pieces of information, it is in the context of a mental model of the world rather than the actual world itself as the world is too large to comprehend totally (Evans, 1989). Two major theories in this area are those proposed by Evans (1984, 1989) and Kahneman (2003). In both theories, the decision is held to be made in two phases. In the first phase, (intuition/heuristic), reasoning is performed in a largely automatic, unconscious, pre-attentive manner. In phase 2 (reason/analytic), reasoning is deliberate, conscious and monitored. It is generally held that information is selected as relevant or accessed during the first phase for consideration in the second phase. We adopt the Evans' Heuristic-Analytic (HA) model for use in this paper.

### **Heuristic-Analytic Theory**

HA theory postulates that thinking is selectively focused on relevant parts of problems and that prior knowledge, heuristics, and schemas are retrieved as determined necessary by pre-attentive heuristics (Evans, 1996). See Figure 1. Evans (1989) postulates that the major cause of bias in human reasoning lies in the heuristic processes adopted to select information for processing. If a heuristic fails to select a key piece of information or selects an irrelevant piece of information for processing, the subsequent analysis will be flawed. The analysis itself will be accurate only to the extent that the mental model of the world that one has constructed is accurate (1989).

In the heuristic phase, two groups of factors affect the selection of relevant infor-

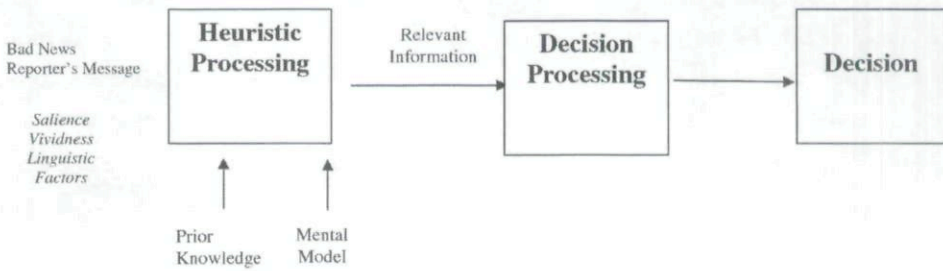


Figure 1. Model of Heuristic—Analytic Decision-making Process

mation: message characteristics and the mental model of the decision maker. The message characteristics include such components as vividness/salience, comprehensibility and certain linguistic cues. Vividness/salience refers to how well the message stands out from competing messages/sensations within the decision maker's environment. Linguistic cues signal the decision maker on how to focus their attention (Evans, 1996).

The decision maker's mental model refers to the model that the decision maker has of the real world including their conception of cause and effect relationships, expectations, beliefs and other structural factors. In the heuristic phase of decision making these structures are accessed pre-consciously to assist in filtering relevant from irrelevant information. From the decision maker's bank of experience, additional available relevant information is also accessed.

**A RESEARCH MODEL OF THE DEAF EFFECT**

In this section, we use insights from cognitive psychology and Miceli and Near's whistleblowing effectiveness theory to develop a research model (Figure 2) that provides the basis for an initial experiment on the causes of the deaf effect. We adopt the basic process from Evans for the proposed model.

Evans (1989) states that decision makers pre-attentionally select the information that they believe will be relevant to making the decision using their mental model heuristics. Thus the bad news reporter's (BNR's) message would be evaluated for relevance using the

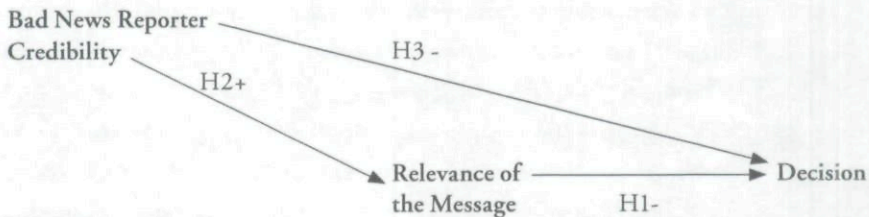


Figure 2. Research Model for this Experiment

decision maker's mental model heuristics. Once the message passed the heuristics, it would be considered in the decision process. From this we see that to be effective, a BNR's message must be considered as relevant before it can be actively evaluated. We therefore propose hypothesis 1:

*H1: When the report of bad news is considered relevant, the decision maker will be more likely to discontinue the present course of action*

Part of this pre-attentive processing is to determine whether the bad news report must be attended to. This is where the credibility of the whistle-blower as postulated by Near and Miceli (1995) may be processed. If the decision-maker determines that the whistle-blower is not credible, then the message may be disregarded. We therefore propose the following hypothesis:

*H2: Reporters of bad news who are considered credible will tend to have their messages considered as relevant*

Miceli and Near also indicate that whistle-blowers who are credible are also more effective in terminating wrongdoing. The Heuristic Analytic Theory indicates that during relevance processing, information is selected and passed on to the analytic process for analysis. Thus decision makers may bring their assessment of the credibility of the whistle-blower into their decision process. The effect of the BNR's credibility may not be completely mediated by the relevance decision but may also have a direct effect on the decision. Therefore we propose hypothesis 3:

*H3: Reporters of bad news who are considered credible will be more effective in convincing the decision maker to change their course of action*

## **EXPERIMENTAL DESIGN**

### **Experimental Model**

We tested these hypotheses using a role-playing experiment with student subjects. While the use of student subjects can pose limitations in terms of external validity, there is ample precedent for using student subjects in studies with organizational decision-making tasks (Sitkin et al., 1995) and, specifically, decisions associated with project management (Harrison, et al.; 1993, Smith et al., 2001). There is support in the literature for using students as surrogates for managers in studies that focus on decision-making and which do not require deep knowledge of particular domain. Remus (1986), for example, reported no differences in decision making between students and managers in the context of production scheduling. Locke (1986, p. 6) notes that "both college students and employees appear to

respond similarly to goals, feedback, incentives, participation, and so forth, perhaps because the similarities among these subjects (such as in values) are more crucial than their differences." Liyanarachchi and Milne (2005) have indicated that in situations where only psychological processes are being tested and not attitudes and knowledge that would be developed through experience, students stand as a good surrogate for experienced managers. Additionally, the role-playing scenario was constructed so as to place the subject in the role of a recent graduate, which provides a decision-making context that is close to what might be expected from the subject population.

### **Scenario Description**

We created a role-playing experiment that included the elements of the deaf effect described above. Modeled partially on the Providian Trust case (McFarlan, 1997), the subjects were cast as a project manager responsible for development of a new system to be put into production. As part of standard procedures, an internal auditor has reviewed the project and given a negative report on its readiness for production. The auditor has not given specific or understandable reasons for why s/he believes the project will fail and the decision-maker was not given enough information to resolve the problem alone, forcing reliance on the assertions of others. Exogenous factors were introduced to motivate the subjects in the direction of putting the system into production. The decision-maker can choose to have a known problem in dealing with management's expectations if s/he chooses to delay the project, or an uncertain catastrophic problem if s/he implements the system and the auditor is right or no pain at all if the system implementation goes well.

Two alternate case scenarios manipulated the credibility of the auditor (see Appendices A and B). In creating this manipulation, we made use of source credibility theory. According to this theory, source credibility is primarily composed of two dimensions: *Expertise*, the extent to which a speaker is considered to be capable of making correct assertions and *trustworthiness*, the extent to which a speaker can be relied upon to make true assertions (Hovland et al., 1953). In general, a highly credible source is more effective in creating attitudinal or behavioral change than a source with low credibility. The expertise and trustworthiness dimensions have differential weights; in general, trustworthiness has a larger impact than expertise (McGinnies et al., 1980). In terms of the construction of the message, *evidence and argumentation* used by the source have mixed effects. The presence of *unfamiliar evidence* increases the credibility of the low credibility source, but leaves the high credibility source unchanged (McCroskey, 1969; McCroskey, 1970). The *quality of arguments* changes attitudes more for the high credibility source than for the low and decision-makers are more likely to act based on strong arguments of a highly credible source and least likely to act when the highly credible source gives weak arguments (Moore et al, 1986).

When the *message disagrees* with the recipients' initial opinion, a highly credible source is more effective the more the message disagrees with the recipient's opinions, while the low credibility sources are more effective with only a moderate level of disagreement (Bochner et al., 1966). When faced with various kinds of *threats* (physical or social) for non-compliance with the message, the most effective in changing attitudes is the strong threat delivered by a highly credible source (Miller et al., 1969). A bias also seems to exist in the *message style*; low credibility sources tend to have their negative information rejected more significantly than positive information. Similarly, a high credibility source has the negative information given more credence than positive (Czapinski et al., 1979). *Language intensity* has a contrasting impact. For high credibility sources, it enhances their message. However, for low intensity sources it decreases their effectiveness (Hamilton et al., 1990).

In the positive scenario for our study, the auditor was portrayed as valuable to the company and having a track record of successfully evaluating projects (i.e., possessing expertise and trustworthiness). In the negative scenario, the auditor had a poor track record. Moreover, the subject's team and manager dismissed his credibility and the auditor was said to "cry wolf" in order to gain attention (i.e., the auditor lacked expertise and trustworthiness). As indicated by the source credibility literature, the lack of evidence produced by the auditor will not hurt in the high credibility manipulation nor provide needed enhancement in the low credibility treatment. The scenario uses a negative message contrasting with the subject's initial opinion, has extreme language ("disaster waiting to happen"), and places the subject in a socially threatening environment, all aspects that should enhance the positively placed auditor and not enhance the negatively placed auditor.

### Operationalization of Variables

The key experimental variables were operationalized using a set of questions with a Likert scale. The individual scale items for each variable were centered prior to analysis.

**Dependent Variable: Decision.** The dependent variable, decision, was operationalized as a single, eight-point Likert scale question in which the subject was asked to choose to "Test Further" or "Move to Production". Anchor points for the variable were "Definitely Test Further" and "Definitely Move to Production." Intermediate points were "strongly," "somewhat" and "slightly" on each side of the scale. While it might be thought that "decision" is a binary yes/no variable, we wanted to additionally measure the strength of their decision. We wanted to get a reading on whether subjects believed strongly in their decision.

**Independent Variables: Relevance, Salience and Perception of Auditor Credibility.** The independent variables were operationalized using multi-item seven-point Likert



scale questions anchored with "Strongly Agree" and "Strongly Disagree" on the end points and "neutral" in the mid-point. The last relevance question was reverse scaled. We measured salience as a manipulation check to ensure that there was not a variation in salience of the auditor's message between the scenarios.

### **Instrument**

Students were instructed to read the scenario as described above and then were asked to make a decision as to whether to move the project into production (i.e., implement it) or delay the project for further testing. A subsequent questionnaire (Appendix C) asked for the reasons for their decision. Demographic data were collected for gender, age, and years of full-time paid work experience.

### **Statistical Controls**

A number of demographic variables were statistically controlled for in the study. Gender was dummy coded (female = 0 and male =1) as was the class from which the samples were drawn. We also collected age, and years of full-time experience. These variables were centered prior to the analysis. We also collected information on the salience of the auditor's message which we used as a manipulation check to ensure that the salience did not vary across the manipulations.

## **EXPERIMENTAL RESULTS**

This section describes the results obtained from the study. In this study, causal linkages were noted moving in a single direction from credibility to relevance and from relevance to the decision. While many behavioral studies are non-directional, there seemed to be only one logical possibility for movement in this study.

### **Demographics**

The demographics of our subject pool can be seen in Table 1. Subjects had an average age of 20.5 years and an average work experience of 2.5 years. Fifty-seven percent of the subjects were female and 43% were male.

### **Descriptive Statistics and Manipulation Checks**

We obtained 60 usable responses. Table 1 shows the descriptive statistics for the key variables. Table 2 shows the same variables split into treatment groups. Two tailed t-tests were performed at 5% alpha in order to determine significant differences in the scores between the two treatment groups. These are shown in Table 3.

**Table 1.** Descriptive statistics for key variables

Variable	Mean	Standard Deviation	N
Decision	2.83	1.924	60
Relevance	4.95	1.303	60
Saliency	4.62	1.025	60
Auditor Credibility	4.472	1.33	60

**Table 2.** Descriptive statistics by treatment group

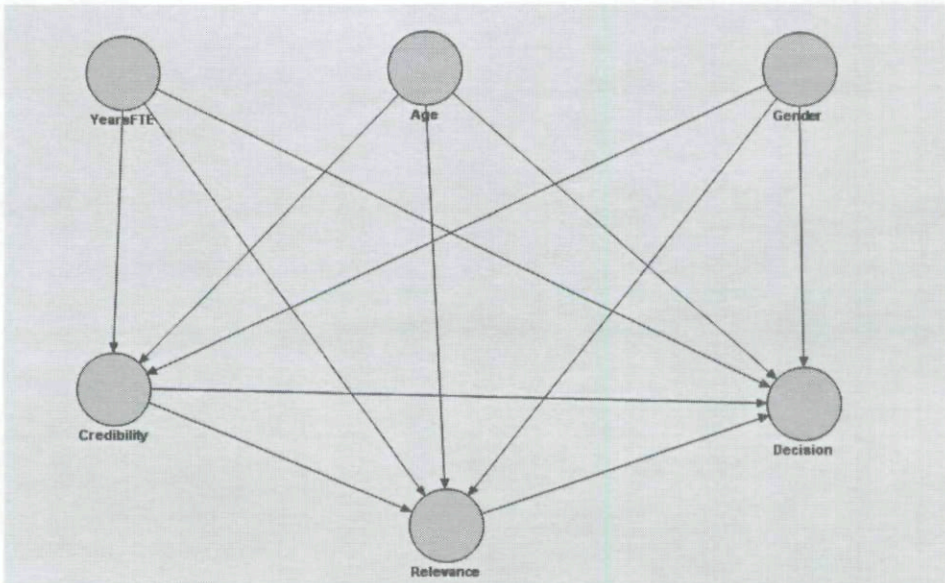
Treatment	Variable	Mean	Standard Dev.	
Negative N=31	Decision	3.26	2.016	
	Relevance	4.63	1.294	
	Saliency	4.56	1.138	
	Auditor Credibility	3.67	1.128	
	Gender	16 male/15 female		
Positive N=30	Decision	2.37	1.712	
	Relevance	5.26	1.26	
	Saliency	4.68	.912	
	Auditor Credibility	5.28	.995	
	Gender	11 male/19 female		

**Table 3.** Results of two tailed t-tests

Variable	Difference	t-score	Significance
Decision	.89	1.859	.068
Relevance	-.62	-1.897	.063
Saliency	-.12	-0.438	.663
Auditor Credibility	-1.61	-5.868	.000

These tests show that the perception of the auditor's credibility varied significantly across the treatment groups. The manipulation therefore was effective. Saliency, which was held constant, did not vary significantly indicating that the perception of the saliency of the auditor's message was stable across the treatments. The decision variable changed almost a point across the manipulations indicating that those receiving the positive manipulation were less likely to move the product into production than those receiving the negative manipulation. Similarly, the subjects receiving the positive manipulation had a higher perception of the relevance of the auditor's message and a higher perception of the auditor's credibility.

The decision variable for both treatment groups showed that subjects tended to



**Figure 3.** PLS Structural Model (from Ringle, Wende, & Will, 2005)

favor delaying the product implementation. They also tended to consider the auditor’s message relevant in both treatments.

**PLS Analysis**

We subjected the data to a PLS analysis using the SIMPLS program V2 M3 (Ringle et al., 2005). Figure 3 shows our structural model. We analyzed each of the demographic variables against the model constructs to determine any effects from them as well as the predicted effects. In addition to the PLS analysis, we executed a bootstrap analysis using the default parameters of 100 sample size and 200 samples. Table 4 shows the quality measures from the PLS analysis.

**Table 4.** Quality Measure from PLS Analysis

	AVE	Comp. Reliab	R Square	Cronbach’s Alpha	Communality	Redundancy
Age	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000
Credibility	0.6476	0.8455	0.0290	0.7447	0.6476	0.0077
Decision	1.0000	1.0000	0.6183	1.0000	1.0000	-0.0018
Gender	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000
Relevance	0.7152	0.9248	0.1920	0.8943	0.7152	0.0399
Years FTE	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000

**Table 5.** Confirmatory factor analysis

	Age	Credibility	Decision	Gender	Relevance	YearsFTE
CAge	1.0000	-0.1353	0.2774	0.1426	-0.2434	0.4564
CYearsFTE	0.4564	-0.0003	0.2550	0.1451	-0.0974	1.0000
Decision	0.2774	-0.4244	1.0000	0.1646	-0.7341	0.2550
Gender	0.1426	-0.0892	0.1646	1.0000	0.0029	0.1451
IAHighlyReg	0.0693	0.7269	-0.2662	0.0553	0.1981	0.1500
IAMostCred	-0.1696	0.8955	-0.4389	-0.1143	0.4327	-0.0085
IAOrgLoyalty	-0.1628	0.7826	-0.2635	-0.1110	0.2112	-0.1138
RelvDisIA	-0.2024	0.2816	-0.4443	-0.0574	0.5931	-0.1185
RelvHighly	-0.1461	0.3602	-0.6097	0.0529	0.9020	0.0111
RelvMorInfl	-0.2301	0.4636	-0.7186	0.0674	0.9090	-0.1020
RelvMosInfl	-0.2608	0.2685	-0.6717	0.0401	0.8849	-0.1483
RelvVeryImp	-0.1865	0.2127	-0.6128	-0.0409	0.8952	-0.0201

We see that the reliabilities for both the credibility and relevance variables are over .84, the AVE is over .64 and the Cronbach's alpha is over .74 for each, indicating that we have good convergent validity for these constructs. PLS performs a confirmatory factor analysis of the measurement model. The results of this analysis are shown in Table 5.

From this analysis, we see that all measurement items factored as expected and that we have no cross-loading. Additionally, the Latent Variable Correlations (Table 6) show that none of the correlations exceeds the square root of the average variance indicating good divergent validity for the relevance and credibility constructs. The path coefficients for the study are shown in Table 7. The significant paths are indicated. Figure 4 shows the significant paths.

We find that as the relevance of the auditor's message increases, the willingness of the subject to decide to put the system into production decreases by approximately 2/3 of a point for each point increase in the relevance score. Additionally, we find that as the

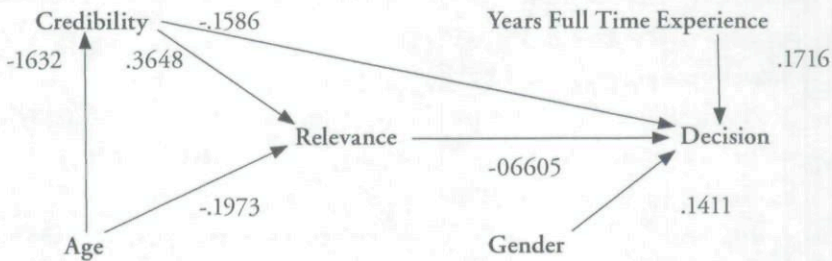
**Table 6.** Latent value correlations (with SQRT(AVE) inserted on the diagonal)

	Relevance	Credibility	Decision	Gender	Age	YearsFTE
Relevance	0.846					
Credibility	0.3838	0.805				
Decision	-0.7341	-0.4244	1.000			
Gender	0.0229	-0.0892	0.1646	1.0000		
Age	-0.2434	-0.1353	0.2774	0.1426	1.0000	
YearsFTE	-0.0974	-0.0003	0.2550	0.1451	0.4564	1.0000

**Table 7.** Path coefficients and t-statistics for bootstrapping analysis

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STEV)	Standard Error (STERR)	T Statistics ( O/STERR )
Age Credibility*	-0.1632	-0.1650	0.0774	0.0774	2.1095
Age Decision	-0.0032	0.0099	0.0771	0.0771	0.0421
Age Relevance*	-0.1973	-0.1973	0.0893	0.0893	2.2095
Credibility Decision*	-0.1586	-0.1548	0.0734	0.0734	2.1612
Credibility Relevance*	0.3648	0.3772	0.0849	0.0849	4.2971
Gender Credibility	-0.0783	-0.0842	0.1090	0.1090	0.7185
Gender Decision*	0.1411	0.1520	0.0657	0.0657	2.1680
Gender Relevance	0.0864	0.0909	0.1049	0.1049	0.8238
Relevance Decision*	-0.6605	-0.6604	0.0526	0.0526	12.5575
YearsFTE Credibility	0.0855	0.0805	0.1058	0.1058	0.8083
YearsFTE Decision*	0.1716	0.1736	0.0590	0.0590	2.9072
YearsFTE Relevance	-0.0198	-0.0192	0.0986	0.0986	0.2003

\*=T-statistic > 2.00



**Figure 4.** Schematic Diagram of Results from PLS Analysis

credibility of the auditor increases, the relevance of the message to the subject's decision making process increases. Age tends to have a negative effect on the relevance of the auditor's message. Male subjects and those who have full time work experience tend to be more likely to put the system into production.

## DISCUSSION

Three hypotheses were tested:

*H1: When the report of bad news is considered relevant, the decision maker will be more likely to discontinue the present course of action*

*H2: Reporters of bad news who are considered credible will tend to have their messages considered as relevant*

*H3: Reporters of bad news who are considered credible will be more effective in convincing the decision maker to change their course of action*

We found evidence supporting all of our hypotheses. Relevant messages from the auditor were strongly significant and decreased the decision rating by approximately 2/3 point for each point increase in the relevance score. This result indicates that to the extent the message is found to be relevant, the likelihood of changing course in information systems projects is significantly increased. Thus hypothesis 1 was supported. The credibility of the bad news reporter does co-vary with the relevance measure. Bad news reporters with higher credibility tended to have their messages viewed as relevant in the context of information systems projects. Hypothesis two was thus confirmed. We also found that credibility co-varies with the decision with 40% of its effects being on the decision, which confirms hypothesis three. Thus, the whistle-blower's credibility not only affects how the subjects view the relevance of the message to their decision, it also directly influences the subjects' decisions.

Both treatment groups were strongly in favor of delaying the project. Even in the negative treatment group, where the credibility of the auditor was significantly questioned, the subjects opted to delay. One explanation for this effect stems from the position of the auditor. Miceli and Near (2002) found that whistle blowing is more effective when role-prescribed. In the descriptive comments section of the questionnaire, several of the subjects referred to credibility that accrued to the auditor as a result of that role or the unwillingness to contradict the auditor even in the face of negative comments by their team members and manager.

In an unexpected result, it was found that gender had an effect on the decision. Women were more likely to delay the project than men. One possible explanation for this difference is that women are more willing to accept personal negative impacts in order to

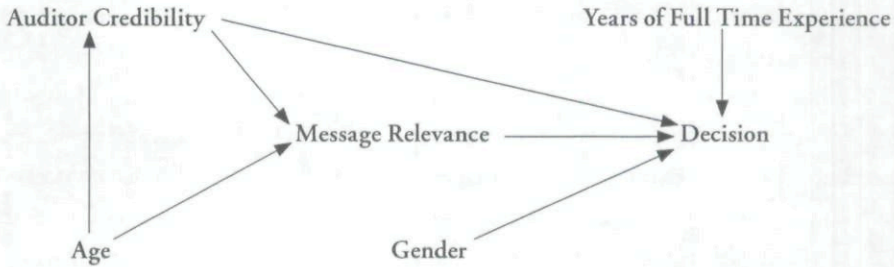


Figure 5. Revised Model

avoid negative impacts to the organization. Additionally, we note that age tended to decrease the credibility of the auditor and the relevance of the message and that increasing full time work experience tended to increase the likelihood of putting the system into production. These effects could be a result of socialization in the workplace. It might be that as employees gain experience in organizations, they learn to defer to managerial pressure and do what they perceive that their manager wants done when they are in situations of uncertainty.

Because the bad news reporter's credibility was not fully mediated by perceived relevance and because gender had an effect on the decision, we must modify the experimental model by adding gender as an effect on the decision and an effect from bad news reporter credibility to the decision point.

### IMPLICATIONS FOR RESEARCH

The results on bad news reporter credibility support Miceli and Near's proposal that whistle-blowers who are more credible are more effective in terminating the offending behavior. The experiment has shown that when an internal auditor is perceived as credible, the subjects are more likely to stop the project for further testing.

Additional research is required to provide further development of this theory. The study should be repeated with other subjects to test for generalizability. Active IS professionals, especially project managers, should be studied to determine if the effect occurs as described in that population. Variations of the study should be conducted with subjects asked to play roles that do not have a role prescription for bad news reporting to see whether this influences the deaf effect. More research is also needed to explore the effects of age, full time work experience and gender that were observed in this study.

The other areas of the model also need to be explored. Does the presence of additional "noise" in the communication channel contribute to the decision maker not perceiving that a message is trying to be sent? Are perceptual features critical to the relevance determination? What other heuristics are used to determine relevance? The entire analytic processing section needs to be researched. What is the process by which the decision is made? How is

credibility considered? What factors beyond credibility are considered in the analytic portion of the decision?

Additional research should be done on the organizational antecedents of the deaf effect. What organizational factors favor the occurrence of the deaf effect? Are there actions, deliberate or inadvertent, that managers take which incent subordinate decision makers to continue failing courses of action in spite of bad news reports? Do organizational politics make decision makers more likely to ignore bad news reporters? Does the cohort at the top of a project have an effect on the occurrence of the deaf effect? Does homogeneity or heterogeneity of the cohort modify the response to bad news?

While many questions remain to be answered, this study has shown evidence that the deaf effect response to bad news reporting is founded in the perceived relevance of the bad news reporter's message, which in turn is influenced by his/her perceived credibility and salience of the message.

### **IMPLICATIONS FOR PRACTICE**

In terms of implications for practice, this study suggests that managers should seek to raise the credibility of bad news reporters within the organization. Particularly for auditors, who have to provide project assessments, efforts should be made to make them credible to project teams. This could be done by raising their expertise and trustworthiness. They should have a significant knowledge base in the project's technology and in assessing project risk factors. Management should also provide indications of their confidence and trust in auditors by utilizing their services and providing support for bad news reporting actions. Auditors should also work with project teams in non-threatening situations by becoming information resources to members of project teams, thereby providing assistance in terms of proactive support in preventing or mitigating project risk factors.

### **CONCLUSION**

In this paper, we examined the deaf effect response to bad news reporting in information systems project management in terms of Miceli and Near's (2002) work on whistle-blowing effectiveness and Evans' Heuristic-Analytic theory of decision making. We developed a research model that hypothesized that the credibility of the bad news reporter affected how relevant the decision maker found the bad news reporter's message. We tested the model in a role-playing experiment and found support for the basic propositions of the theory examined. Bad news reporter credibility is partially mediated by relevance processing and has an effect on the decision.



## **APPENDIX A. Scenario with Positive Credibility Manipulation**

### **Instructions**

1. The following scenario is part of a study in business decision-making.
2. Read the scenario completely and thoroughly before you go to the next page.
3. Adopt the role of the project leader and then answer each of the questions in order as the project leader would answer them.

**This is not a test.**

**There are no right answers or wrong answers.**

4. Please, do not discuss this study with anyone outside of this room.

Blackstone Bank is one of the top ten banks in the southeastern United States. You joined the bank in their IT department soon after you finished school. You consider the IT department a "tough but fair" place to work. The management team has a low tolerance for poor performance. Project managers have been fired or demoted for late delivery or poor product quality. On the other hand, significant bonuses have been known to be awarded for on-time, high quality deliveries.

Six months ago, you were named to lead your first project. With this assignment, you became responsible for development of a new system with the opportunity to earn a significant bonus for on-time implementation of the system. The technology being used is unfamiliar to you so you are dependent upon your team members to track the status of the project.

Your team has impressed you with their competence and work ethic. They have cooperated with you at every turn and you've not had to supervise them closely to ensure that work gets done. Your experience with them suggests that **you can trust what the team is telling you.**

Development has now been completed. **Your team has indicated that the system is ready to go.** It is standard procedure to have the internal auditor review all systems prior to implementation. **Blackstone's auditor is a well-respected leader in his field with a very mature evaluation methodology,** so you look forward to reading his report. Within the company, he is credited with **saving the company millions of dollars and his word is unquestioned.**

After the auditor reviewed your project's documentation, he told you that **your system was effectively untested, a "disaster waiting to happen" and that you needed to rigorously test everything.** When you asked the auditor to explain his reasoning, he talked a

lot about decision trees, regression testing and other things you didn't understand. He left you a copy of his report, wished you luck and left your office.

When you reviewed the report with your programming team, they cited their years of experience in the profession, with this technology and success on other projects arguing that, contrary to the auditor's report, the system was ready to go

When you tried to discuss the situation with your manager, he pointed out that the VP of Information Systems had promised the VP of Operations that the system would be implemented by next month and would be extremely displeased if that didn't occur. In which case, you had better have a good justification for your actions because YOU were going to have to explain it to him. Bad project managers had been fired or demoted before and he would hate to see your career ruined before it had really begun. At which point he told you get with your team and figure out what you were going to do.

As you left his office, you saw two courses of action. You could decide to delay the project for **further testing and evaluation**, in which case you would have to justify your decision in front of the VP of Information Systems. Or, you could decide to **move the system into production as scheduled** and collect your bonus if it went well or face the unthinkable if the system failed.

You must decide which of the two courses of action to take.

#### **APPENDIX B. Scenario with Negative Credibility Manipulation**

##### Instructions

1. The following scenario is part of a study in business decision-making.
2. Read the scenario completely and thoroughly before you go to the next page.
3. Adopt the role of the project leader and then answer each of the questions in order as the project leader would answer them.

**This is not a test.**

**There are no right answers or wrong answers.**

4. Please, do not discuss this study with anyone outside of this room.

Blackstone Bank is one of the top ten banks in the southeastern United States. You joined the bank in their IT department soon after you finished school. You consider the IT department a "tough but fair" place to work. The management team has a low tolerance for poor performance. Project managers have been fired or demoted for late delivery or poor product quality. On the other hand, significant bonuses have been known to be awarded for on-time, high quality deliveries.

Six months ago, you were named to lead your first project. With this assignment, you became responsible for development of a new system with the opportunity to earn a significant bonus for on-time implementation of the system. The technology being used is unfamiliar to you so you are dependent upon your team members to track the status of the project.

Your team has impressed you with their competence and work ethic. They have cooperated with you at every turn and you've not had to supervise them closely to ensure that work gets done. Your experience with them suggests that **you can trust what the team is telling you.**

Development has now been completed. **Your team has indicated that the system is ready to go.** It is standard procedure to have the internal auditor review all systems prior to implementation. **The other project leaders consider the auditor to be somewhat of a joke, indicating that he tends to "cry wolf" and exaggerate issues to get his point across.**

After the auditor reviewed your project's documentation, he told you that **your system was effectively untested, a "disaster waiting to happen" and that you needed to rigorously test everything.** When you asked the auditor to explain his reasoning, he talked a lot about decision trees, regression testing and other things you didn't understand. He left you a copy of his report, wished you luck and left your office.

When you reviewed the report with your programming team, they cited their years of experience in the profession, with this technology and success on other projects arguing that, contrary to the auditor's report, the system was ready to go

When you tried to discuss the situation with your manager, he became angry and indicated that the auditor had never identified a serious problem and often overstated problems in an attempt to show his value to the company. He then pointed out that the VP of Information Systems had promised the VP of Operations that the system would be implemented by next month and would be extremely displeased if that didn't occur. In which case, you had better have a good justification for your actions because **YOU** were going to have to explain it to him. Bad project managers had been fired or demoted before and he would hate to see your career ruined before it had really begun. At which point he told you get with your team and figure out what you were going to do.

As you left his office, you saw two courses of action. You could decide to delay the project for **further testing and evaluation**, in which case you would have to justify your decision in front of the VP of Information Systems. Or, you could decide **to move the system into production as scheduled** and collect your bonus if it went well or face the unthinkable if the system failed.

You must decide which of the two courses of action to take.

**APPENDIX C. Data Collection Instrument**

	Test Further					Move to Production			
1. Please indicate what you will decide, and how strong that decision will be. (Mark only one of the eight boxes)	Definitely	Strongly	Some- what	Slightly		Slightly	Some- what	Strongly	Definitely
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Please briefly explain why you made the decision you did to question 1:

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3. Your gender (please circle one choice only): Male Female

4. Your age (whole numbers only): \_\_\_\_\_ Years

5. The country in which you were born: \_\_\_\_\_

6. The number of years you have lived in the United States (whole number only): \_\_\_\_\_

7. The total number of years, full-time, paid work experience you have in any capacity (whole numbers only): \_\_\_\_\_

8. The total number of years, full-time, paid experience in information systems support (whole numbers only): \_\_\_\_\_

9. The total number of years, full-time, paid experience in IS programming (whole numbers only): \_\_\_\_\_

10. Number of years of project management experience (whole numbers only): \_\_\_\_\_

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
11. The internal auditor's assessment was <b>highly relevant</b> in forming my decision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The internal auditor's assessment was <b>very important</b> in forming my decision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
13. My decision was <b>most influenced</b> by the internal auditor's assessment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. My decision was <b>more influenced</b> by the internal auditor's assessment than any of the other views expressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. In making my decision, I <b>dismissed the internal auditor's</b> information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The internal auditor's assessment was the <b>outstanding</b> information in the scenario.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. The internal auditor's assessment seemed to <b>stand out</b> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The internal auditor's information was the <b>most noticeable</b> information in the scenario.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The internal auditor's assessment was the <b>most prominent</b> information in the scenario.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I used <b>information from my past experience</b> in addition to information from the scenario to help me make my decision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The Internal Auditor is the <b>most credible</b> person in the scenario.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. The internal auditor is <b>highly regarded</b> by executives in the company.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. The internal auditor is motivated by a desire to see <b>things done correctly</b> for the bank.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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## REFERENCES

- Bochner, S. and Insko, C. "Communicator Discrepancy, Source Credibility and Opinion Change," *Journal of Personality and Social Psychology* (4), 1966, pp. 614-621.
- Computer.Business.Review. "The Political Gateways—Failures of Public Sector IT Projects," *Computer Business Review*, 2006.
- Czapinski, J. and Lewicka, M. "Dynamics of Interpersonal Attitudes: Positive-Negative Asymmetry," *Polish Psychological Bulletin* (10), 1979, pp. 31-40.
- Evans, J. S. B. T. "Heuristic and Analytic Processes in Reasoning," *British Journal of Psychology* (75), 1984, pp. 451-468.
- Evans, J. S. B. T. *Bias in Human Reasoning Causes and Consequences*, Lawrence Erlbaum Associates, Hove East Sussex U.K, 1989.
- Evans, J. S. B. T. "Deciding before you Think: Relevance and Reasoning in the Selection Task," *British Journal of Psychology* (87), 1996, pp. 223-240.
- Hamilton, M. A., Hunter, J. E. and Burgoon, M. "An Empirical Test of an Axiomatic Model of the Relationship between Language Intensity and Persuasion," *Journal of Language and Social Psychology* (9), 1990, pp. 235-255.
- Harrison, P. D. and Harrell, A. "Impact of 'Adverse Selection' on Managers' Project Evaluation Decisions," *Academy of Management Journal* (36:3), 1993, pp. 635-643.
- Hovland, C., Janis, I. and Kelley, H. *Communication and Persuasion*, Yale University Press, New Haven, CT, 1953.
- Kahneman, D. "A Perspective on Judgment and Choice: Mapping Bounded Rationality," *American Psychologist* (58:9), September 1, 2003.
- Keil, M. and Robey, D. "Blowing the Whistle on Troubled Software Projects," *Communications of the ACM* (44:4) 2001, pp 87-93.
- Liyanarachchi, G. A. and Milne, M. J. "Comparing the Investment Decisions of Accounting Practitioners and Students: An Empirical Study of the Adequacy of Student Surrogates," *Accounting Forum* (29:2) 2005.
- Locke, E. A. *Generalizing From Laboratory to Field Settings* Lexington Books, Lexington, 1986.
- McCroskey, J. C. "A Summary of Experimental Research on the Effects of Evidence in Persuasive Communication," *Quarterly Journal of Speech* (55) 1969, pp 169-176.
- McCroskey, J. C. "The Effects of Evidence as an Inhibitor of Counterpersuasion," *Speech Monographs* (37) 1970, pp 188-194.
- McFarlan, W. and Dailey, M. "Providian Trust: Tradition and Technology (B)," Harvard Business School Publishing, 1997.
- McGinnies, W. J. and Ward, C. "Better Liked than Right: Trustworthiness and Expertise as Factors in Credibility," *Personality and Social Psychology Bulletin* (6) 1980, pp 467-472.
- Miceli, M. P. and Near, J. P. *Blowing the Whistle the Organizational and Legal Implications for Companies and Employees*, (1st ed.) Lexington Books, 1992.
- Miceli, M. P. and Near, J. P. "What Makes Whistle-Blowers Effective? Three Field Studies," *Human Relations* (55:4) 2002, pp 455-479.
- Miceli, M. P., Near, J. P. and Schwenk, C. R. "Who Blows the Whistle and Why?," *Industrial and Labor Relations Review* (45:1), October 1991, pp 113-130.

*The Deaf Effect Response to Bad News Reporting in Information Systems Projects*

- Miller, G. and Basehart, J. "Source Trustworthiness, Opinionated Statements and Response to Persuasive Communication," *Speech Monographs* (36) 1969, pp 1-7.
- Near, J. P. and Miceli, M. P. "Effective Whistle-Blowing," *Academy of Management Review* (20:3) 1995, pp 679-708.
- Remus, W. "Graduate Students as Surrogates for Managers in Experiments on Business Decision Making," *Journal of Business Research* (14:1) 1986, pp 19-25.
- Ringle, C. M., Wende, S. and Will, A. "SmartPLS," University of Hamburg, Hamburg, Germany, 2005.,
- Sitkin, S. B. and Weingart, L. R. "Determinants of Risky Decision-Making Behavior: A Test of the Mediating Role of Risk Perceptions and Propensity," *Academy of Management* (38:6) 1995, pp 1573-1592.
- Smith, H. J., Keil, M. and Depledge, G. "Keeping Mum as the Project Goes Under: Toward an Explanatory Model," *Journal of Management Information Systems* (18:2) 2001, pp 189-227.
- Stanovich, K. E. and West, R. F. "Individual Differences in Framing and Conjunction Effects," *Thinking and Reasoning* (4:4) 1998, pp 289-317.

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