

# Escalation of Commitment in Groups and the Moderating Effects of Information Framing

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## Abstract

*The escalation effect occurs when managers elect to commit additional resources to a project where the unfavorable economic prospects indicate the project should be canceled. It has been suggested that the context in which the decision is reached (e.g., a manager's responsibility for the original decision to invest in a project) may influence a manager's decision choices (Staw 1981). Bazerman (1984) suggests that framing of information used by decision-makers may explain the escalation effect. This study investigates whether responsibility for a prior decision will affect decision-making in interactive groups in an escalation situation. Additionally, this study looks at the effect of framing on the group's decisions and examines the ability of framing to moderate the escalation effect resulting from "responsibility." The results suggest that groups are subject to escalating commitment when they are responsible for a prior related investment decision. The results also provide evidence that groups are influenced by the framing of decision-relevant information, and further, that the framing may have the ability to moderate the effects of responsibility. Implications for organizational decision making are provided.*

## Introduction

A manager who is responsible for making the initial decision to invest in a project will typically have a tendency to "over-commit" additional resources to the project (Staw 1976, 1981; Staw and Fox 1977; Staw and Ross 1978, 1980). This increased total investment can occur even when the project shows poor economic performance. The terms "escalation of commitment" or "escalation effects" are used to describe such investment tendencies.

The manner in which information is presented has also been shown to affect individuals' decision choices. As suggested by prospect theory (Kahneman and Tversky 1979), individuals exhibit risk-seeking behavior when they have negatively-framed information or choices (focusing on the potential for losses) and they exhibit risk-averse behavior when they have positively-framed information or choices (focusing on the potential for savings). Bazerman (1984) suggests that prior escalation research may have been influenced by how the information was framed. Rutledge and Harrell (1993) show that framing can have strong predictable effects on individuals in escalation situations. However, it would be inappropriate to assume that these results

can be extended to a group decision-making context.

This study examines escalation effects in groups and the potential moderating effects of framing of decision-relevant information. Many prior studies in business contexts have examined the effects of framing (c.f., Payne et al. 1980, Hershey and Schoemaker 1980, Mowen and Mowen 1986, Budescu and Weiss 1987, Mowen 1987, Rutledge and Harrell 1993). In order to improve the understanding of the issues discussed above, this study examines two research questions. The first research question, which is based on the work of Bazerman et al. (1984), asks: Do management groups that are responsible for an initial decision to invest resources in a project subsequently tend to invest excessive additional resources in the face of potential failure? The second question, not previously examined, asks: Does the framing of financial information provided to management groups have the potential to moderate the escalation effects?

The organization of this paper is as follows: Section I presents a review of related literature and the development of testable hypotheses. Section II describes the

experimental design. The analysis of data and experimental results are reported in Section III. Lastly, Section IV provides concluding remarks.

### Theoretical Issues and Hypotheses

This section examines prior literature related to escalation of commitment and discusses some of the criticisms that have been made of that research. This literature review is the basis for the first hypothesis that is presented. Next, framing is introduced, including a discussion of its potential moderating effects. This is the basis for the second hypothesis.

#### *Escalation Effects*

The escalation of commitment research examines situations where decision makers can become overly committed to a course of action. Managers may attempt to rationalize a behavioral error by going beyond a misleading report of negative results (Staw and Fox 1977). Decision makers may tend to invest additional resources in an attempt to justify their original investment (Staw 1976, Staw and Fox 1977, Caldwell and O'Reilly 1982, Bazerman et al. 1982, Bazerman et al. 1984).

Staw (1976) was the first to present results of an empirical test of the escalation effect. Subjects in his study either: (a) selected one of two divisions of a company for allocation of research and development funds (the "responsible" condition), or (b) they were told that the allocation was made by another financial officer (the "not responsible" condition). Next, after receiving the results of the allocation decision, the subjects were asked to make another allocation of funds. The results indicate that "responsible" subjects allocated more funds to the originally chosen division than the "not responsible" subjects, and more money was allocated to a declining division than to an improving division. Additionally, a statistically significant interaction term indicated that the greatest amount of funds was allocated when subjects were "responsible" for the choice of a declining division. In general, the results of Staw and his associates indicate that the perceived responsibility of a decision maker will tend to increase the preference for additional investment of resources under the risk of continued negative outcomes (e.g., Staw 1976, Staw and Fox 1977, Bazerman et al. 1984, McCain 1986, Rutledge and Harrell 1993). The only noted study of escalation of commitment in group decision making is Bazerman et al. (1984). Using a task modified from Staw (1976), they found escalation of commitment occurred for four-subject groups.

Similar to Bazerman et al (1984), part of this study examines the issue of groups' escalation due to responsibility for a prior investment decision. However, this

study addresses much of the criticisms aimed at prior escalation effect research by using improved case scenarios.<sup>1</sup>

The above discussion suggests the first hypothesis (H1), which is stated as follows:

**H1:** Management groups that are responsible for the initial decision to invest resources in a failing project will exhibit a greater tendency to commit additional resources to the project than will management groups that are not responsible for the initial investment decision.

#### *The Potential Moderating Effects of Framing*

Decisions made in escalation situations involve decision making under conditions of risk. Expected utility theory (Friedman and Savage 1948) has often been used as both a normative and descriptive model to examine such decision making situations. Kahneman and Tversky (1979) developed prospect theory after noting that several of the axioms of expected utility theory are often violated. Prospect theory suggests that escalation of commitment might occur due to framing of choices as gains or losses (Bazerman 1984, Arkes and Blumer 1985, Whyte 1986). A decision frame is the decision-maker's conception of the acts, outcomes, and contingencies associated with a particular decision (Tversky and Kahneman 1981). The decision frame that is adopted is partially controlled by the positive and negative framing of the information used by the decision maker. Positive framing means the information is formulated terms of its influence on the ability to achieve an event or object. Negative framing means the information is formulated in terms of its influence on the ability not to achieve an event or object. Decision maker's beliefs and actions are strongly and predictably affected by the manner in which decision relevant information is framed (Fischhoff 1983). The effects of framing are demonstrated in a substantial amount of research results (e.g., Fishburn and Kochenberger 1979, Payne et al. 1980, 1981, Tversky and Kahneman 1981, Mowen and Mowen 1986, Budescu and Weiss 1987, Chang et al. 1987).<sup>2</sup>

Bazerman (1984) notes that the information provided to participants in prior escalation studies appears to be negatively framed. He suggests that decision makers were not necessarily acting in a non-rational manner, but rather they may have been acting consistent with the tenets of prospect theory. If prior escalation research was unintentionally influenced by the framing of the financial information provided to the participants, then it is necessary to consider the impact of framing upon managers' escalation decisions. Specifically, the tendency of management groups to increase investment due to "responsibility" in escalation situations may be moderated by positive framing of decision-relevant

information. Similarly, the tendency of management groups to reduce investment when they are not responsible for the initial investment in escalation situations may be moderated by negative framing of information. The second hypothesis (H2) considers this issue.

**H2:** The effect on management groups of responsibility for initial investments in escalation situations will be moderated by the manner in which information is framed.

### Experimental Design and Method

To test the hypotheses, a laboratory experiment was conducted. The 2x2 experiment considered the variables of "responsibility" and "framing" (as more fully described below).

#### Subjects

The study included 213 subjects. All subjects reported being currently employed in a professional business position, 207 of which were full-time. Mean age for respondents was 31 years (88% between 25 and 50), and the subject group included 143 (67%) males and 70 (33%) females. The average person had eight years of business experience, and had worked five years in his/her current occupation. For the 81% of respondents with managerial/supervisory experience, the mean length of the of such experience was 4.5 years and the mean number of employees supervised was 20. For the 65% of respondents with budgeting experience, the mean length of time of such experience was approximately 5 years. Most (84%) of the participants were employed by a company with 100 or more employees. The mean annual individual income of the respondents was over \$37,500. All participants had received an undergraduate college degree, and most had taken several graduate level business courses including courses in financial and managerial accounting.

Given the relevant work and educational experience of the subjects in the study, this group was considered highly appropriate for the managerial/budgeting task that was required of them.

#### Procedures

The experiment required three-person groups to assume the role of the "Financial Vice Presidents of Ace Research & Development Company." They completed a case where \$4 million had previously been invested in a project that (to date) had produced no benefits, and where a competitor has recently exhibited a similar (and in many respects, superior) product to the one being developed. The group considered: Option A, discontinue the project without additional investment; or Option B, invest an additional \$2 million. If the additional

investment was made, there was a 1/3 probability that a product would be developed that could be sold for \$6 million and a 2/3 probability that no benefit would be derived from the additional investment. These dollar amounts and probabilities allow both choices (Option A and Option B) to have the same expected values.

The groups were required (after sufficient discussion within the group) to make a "group decision" as to their preference for continuing or discontinuing the project. The preference response was indicated on an unnumbered, continuous scale that was anchored at one end with "definitely prefer A" (discontinue) and at the other end with "definitely prefer B" (continue). A risk-neutral group (in accordance with the tenets of expected utility theory) would be expected to be indifferent between the choices, and thus choose the midpoint between the two alternatives. Two sample cases are presented in Appendix A to illustrate the information provided to the groups and the experimental manipulations that are described, below.

#### Design

The experiment used a 2x2 factorial design. The subjects were randomly assigned to one of four possible case conditions (two levels of responsibility x two levels of framing). They had read the case for approximately seven minutes before being assigned to three-person groups where each member of a group had the same case conditions for the responsibility and framing variables. The groups were asked to read through the case one more time, and after sufficient discussion within the group, to make a "group decision." Group discussions lasted about five to eight minutes.

Approximately one-half of the groups received information indicating that they recommended the original investment in the project; the remaining groups received information indicating that they were not responsible for the original choice. This experimental manipulation was performed in order to examine the first hypothesis (H1).

In order to examine the second hypothesis (H2), approximately one-half of the groups were provided with positively-framed case information (which emphasized the potential for savings), while the remaining groups were provided with negatively-framed case information (which emphasized the potential for losses).<sup>3</sup>

#### Results

A 2x2 ANOVA was used to analyze the data. The ANOVA includes independent variables for: (1) responsibility (responsible or not responsible for the initial funding decision), and (2) framing (positive or negative). The dependent variable was the groups' preference

**Table 1**  
**ANOVA for Groups' Responses**

<u>Source</u>	<u>DF</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>Pr &gt; F</u>
Model	3	59.7563	19.9188	10.27	0.0001
Error	67	129.9481	1.9395		
$R^2=0.315$					
<u>Source</u>	<u>DF</u>	<u>TYPE III SS</u>	<u>F</u>	<u>Pr &gt; F</u>	
Resp.*	1	13.1643	6.79	0.0113	
Frame	1	45.6772	23.55	0.0001	
Resp. x Frame	1	0.7780	0.40	0.5287	

\*Responsibility Level

choice indicated on the scale at the bottom of the case. After completion of the experiment, the groups' indicated preferences were assigned numerical values based on their relative distance between the two end points of zero ("Definitely Prefer A") and six ("Definitely Prefer B"). The results of the ANOVA used to analyze the data is presented in Table 1.

#### *Analysis of the Main Effect for Responsibility (H1)*

The responsibility variable was manipulated to test for the presence of an escalation effect in group decision-making. That is, groups were expected to have greater preference for continuing a failing course of action when they were responsible for the original commitment than when they were not responsible. As can be seen from Table 1, "responsibility" had a statistically significant main effect ( $p < .0113$ ). As shown in Table 2, the mean preference of groups in the "responsible" condition was 3.208, whereas the mean preference of groups in the "not responsible" condition was 2.362. This result is consistent with a group escalation effect, and supports H1.

#### *Analysis of Framing Effects (H2)*

The framing variable was manipulated to test for its effect on groups of decision-makers in escalation situations. As can be seen from Table 1, framing had a statistically significant main effect ( $p < .0001$ ). The mean preference of groups with positively framed cases was 1.968, whereas the mean preference of groups with negatively framed cases was 3.570. Thus, management groups had a greater preference for continuing a failing course of action when presented with negatively framed information than when presented with positively framed information.

Further analysis of the data finds that the framing effects were in the direction predicted from the theoretical discussion, above. That is, the tendency of management groups to increase investment due to "responsibility" in escalation situations was moderated (reduced) by positive framing of decision information (4.092 for negative framing vs. 2.275 for positive framing,  $p < .001$ ). Additionally, the tendency of management groups to reduce investment when they are not responsible for the initial investment in escalation situations was moderated by negative framing (3.019 for negative framing vs. 1.622 for positive framing,  $p < .001$ ).

#### **Discussion and Implications**

The purpose of this study was to investigate whether factors that have been shown to affect decisions in escalation situations for individuals would have similar effects on group decisions. Additionally, the study examined the potential moderating effects on group decisions of framing of decision-relevant information. Two research hypotheses were developed and tested in a laboratory experiment using a 2x2 experimental design. Responsibility was manipulated to test for the presence of escalation effects on groups, and framing was manipulated to test for potential moderating effects.

A statistically significant main effect was found for responsibility. This supports H1, suggesting that decision-making management groups are more likely to escalate their commitment to a failing course of action when they are responsible for the original investment decision than when they are not. In support of H2, it was found that the tendency to escalate when groups were "responsible" was reduced when the information provided was positively framed as compared to when the information was negatively framed. This suggests that the results of prior research on escalation effects may have been unintentionally influenced by the manner in which financial information was presented to subjects (as suggested by Bazerman 1984). Further, it was found that the tendency to withdraw from projects when decision-making groups were "not responsible" was moderated by negative framing (as compared to positive framing).

Any study's findings and implications must be considered within the context of its strengths and limitations. Experiments of this type allow decision-making behavior to be studied in a controlled environment and thus have the potential for high internal validity. However, caution should be used in generalizing the results of such experiments to other groups and other situations.

**Table 2**  
**Mean Preference Responses for Groups**  
**(including std. error and cell size)**

Responsibility Level	Framing Level		Totals
	Positive	Negative	
<u>Responsible</u>	2.275 (0.260) n=18	4.092 (0.362) n=19	3.208 (0.268) n=37
<u>Not Responsible</u>	1.622 (0.301) n=16	3.019 (0.374) n=18	2.362 (0.269) n=34
<u>Totals</u>	1.968 (0.202) n=34	3.570 (0.272) n=37	2.803 (0.195) n=71

The usual caveats to controlled experiments apply to this study. For example, although the study participants had considerable managerial experience, including budgeting experience, they were not randomly selected from the population of all managers and therefore may not be representative of this population. Further, although the decision cases appear to contain all the information needed for the required decision, they were, of course, simplified abstractions of the real-world situations they represent.

The results of this study have several implications. First, the results imply that organizations need to be concerned with the escalation effects of prior responsibility even when decisions are made by interacting groups. Organizations may need to establish policies that require ongoing projects to be evaluated by groups that include managers who were not responsible for the initial investment decision. Secondly, the results imply that management accountants may unintentionally influence decisions made by interacting groups. Management accountants provide information in their decision support role, and must be made aware of the impact of framing on the decisions made by groups. Lastly, as previously discussed, the results imply that prior escalation findings may need to be re-examined in light of the effects of framing.

**\*\*\*Endnotes\*\*\***

1. General criticisms of the escalation effect research have been offered by several researchers. Northcraft and Wolf (1984) observe that although prior studies provide information about previous costs

and results, information about the potential for future revenues is usually not provided. Additionally, the manipulation of failure feedback in many prior studies is not clear which forces subjects to reach decisions in equivocal circumstances (Bowen 1987). Lastly, Conlon and Leatherwood (1989) point out that case scenarios used in many prior studies were ambiguous which may have influenced subjects into a "past-oriented" focus. The results may have been different if subjects were provided with less ambiguous cases which focused on "future-oriented" information. These above criticisms of prior work were considered when developing the case scenarios used in this study.

2. Although the effects of framing have been shown to be quite robust, some studies have found mixed (e.g., Hershey and Schoemaker 1980, Mowen 1987) or inconsistent results (e.g., Cohen et al. 1987, Fagley and Miller 1987, Schadewald 1989).
3. The positively and negatively framed case information refers to the "wording" of the decision makers' options at the end of the case.

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**Appendix A: Examples of Case Studies Used in the Experiment**

**CASE 1 (High Responsibility, Negative Framing)**

**Case Overview:** Your group includes the current Financial Vice Presidents of Ace Research & Development Company, a position each of you have held for several years. Your responsibilities include reaching decisions about the Company's investments in research projects. Your group must reach a decision about whether to invest additional funds in Project Number 3. **Project 3** is a product research and development project that is currently under way. It has required the investment of \$4 million of company funds over the past 12 months. This project represents about one-fourth of the company's investments in research projects at this time.

A competitor has just exhibited a product that is similar to that of Project 3, but is **superior** in many respects. This has caused the \$4 million investment in Project 3 to have no value. **As the Financial Vice Presidents, your group made the original decision to invest in Project Number 3, so your superiors will hold you, as a group, responsible if a loss is incurred on the project.** This situation may, however, be changed by investing an additional \$2 million (which is available). If your group chooses to invest the \$2 million into Project 3, either a \$6 million product will be developed (thus, recovering the original \$4 million cost plus the additional \$2 million invested now), or a product with no value will be developed. Therefore, your two available options regarding Project 3 are:

**Option A:** If you discontinue Project 3, the loss will be \$4 million.

**Option B:** If you continue with Project 3, there is a 1/3 probability that the loss will be zero, and 2/3 probability that the loss will be \$6 million.

**Decision:** Make a mark "X" at the appropriate place on the line below to indicate your group's preference for Option A or Option B.

|.....|.....|.....|.....|.....|.....|

Definitely Definitely  
Prefer A Prefer B

**CASE 2 (Low Responsibility, Positive Framing)**

**Case Overview:** Your group includes the current Financial Vice Presidents of Ace Research & Development Company. The responsibility for reaching decisions about the Company's investments in research projects has recently been assigned to your group. As such, your group must reach a decision about whether to invest additional funds in Project Number 3. **Project 3** is a product research and development project that is currently under way. It has required the investment of \$4 million of company funds over the past 12 months. This project represents about one-fourth of the company's investments in research projects at this time.

A competitor has just exhibited a product that is similar to that of Project 3, but is **superior** in many respects. This has caused the \$4 million investment in Project 3 to have no value. **A previous Financial Vice President, who resigned to accept a more prestigious position, made the original decision to invest in Project Number 3, so your superiors will not hold you, as a group, responsible for losses incurred up to this point on the project.** This situation may, however, be changed by investing an additional \$2 million (which is available). If your group chooses to invest the \$2 million into Project 3, either a \$6 million product will be developed (thus, recovering the original \$4 million cost plus the additional \$2 million invested now), or a product with no value will be developed. Therefore, your two available options regarding Project 3 are:

**Option A:** If you discontinue Project 3, the \$2 million will be saved.

**Option B:** If you continue with Project 3, there is a 1/3 probability that the \$6 million will be saved (recovered), and 2/3 probability that no money will be saved (recovered).

**Decision:** Make a mark "X" at the appropriate place on the line below to indicate your group's preference for Option A or Option B.

|.....|.....|.....|.....|.....|.....|

Definitely Definitely  
Prefer A Prefer B