

## **The Role of Mental Representations in Organizational Escalation of Commitment**

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## ABSTRACT

We report the results of two experiments that test a cognitive explanation for escalation of commitment to a failing project. We examine whether an information-processing objective (i.e., purpose) influences the mental representations individuals construct to acquire and store information, which in turn, determine whether or not individuals recommend discontinuing a failing project. In Experiment 1, we find that participants assigned to make a project-continuation recommendation (relevant purpose) are more likely to remember critical threats to project viability than are participants assigned a specific, alternative purpose. Moreover, participants assigned a relevant purpose are more likely to recommend discontinuing the failing project than are participants assigned a specific, alternative purpose or a general purpose. A mediation analysis supports the theoretical model and suggests that cognitive factors are at least partially responsible for escalation of commitment. In Experiment 2, we test whether additional cognitive effort induced via a justification requirement reduces escalation of commitment. We find that requiring participants assigned a specific, alternative purpose or a general purpose to justify their recommendations does not reduce escalation. Results suggest that applying additional effort likely will not overcome the effects of using inappropriate mental representations for project-continuation decisions, even when individuals have encountered decision-relevant information.

**Keywords:** Escalation of commitment; Mental representations; Justification; Accountability

## 1. Introduction

Current managerial accounting practice focuses on identifying, measuring, and managing the key drivers of shareholder value (Ittner and Larcker 2001). Successfully managing shareholder value creation requires that managers use feedback (i.e., accounting information) to identify problems and to take remedial actions promptly. However, research suggests that individuals and organizations tend to persist with failing courses of action, even in the face of negative feedback—a phenomenon referred to as “escalation of commitment” (see Brockner 1992 and Staw 1997 for general reviews and Chow et al. 1997; Ghosh 1997; Harrell and Harrison 1994; Jeffrey 1992; and Kanodia et al. 1989 in the accounting literature).

Numerous studies propose social-psychological explanations for escalating commitment. For instance, self-justification motives cause escalation because individuals are unwilling to admit that their prior decisions were “wrong” and thus, they continue to support them (Staw 1976; 1981). Such explanations presume that the same individuals make a series of sequential decisions about a course of action. However, escalating commitment has been observed in diversified organizations where it is unlikely that the managers who received negative operational feedback were the same individuals who made previous decisions to commit resources (e.g., Ross and Staw 1993). Thus, social-psychological factors are unlikely to be solely responsible for escalation of commitment in organizations, and de-escalation strategies targeted exclusively towards these factors are unlikely to be successful.

Although managers’ cognitive representations are related to managerial decision making (Gavetti and Levinthal 2000), research has yet to examine whether such cognitive factors play a role in explaining escalation of commitment. We propose and test a cognitive explanation for

escalating commitment that is independent of the social-psychological factors previously examined and may thus aid in the development of innovative de-escalation strategies.

Specifically, we propose that a decision maker's information-processing objective (hereafter referred to as *purpose*) at the time project-relevant information is encountered influences whether he will escalate commitment to failing projects.

Prior research shows that the purpose for which a decision maker expects to use information influences how it is processed and stored (e.g., Wyer and Srull 1980). We expect that the purpose assigned to individuals before they encounter information relevant to making a project-continuation decision influences whether they are likely to construct mental representations amenable to acquiring and storing project-viability information. We hypothesize that individuals who are assigned a purpose of deciding whether to continue or discontinue a project are more likely to acquire and retain in memory information about critical threats to project viability than are individuals who are not assigned that specific purpose. Because the former individuals are more likely to possess knowledge of the critical threats to project viability, we expect that they will be more likely to recommend discontinuing a failing project.

We conduct two experiments in which participants assume the role of a consultant hired to make recommendations to a company's Board of Directors. We assign participants to an external consulting role rather than a managerial role to minimize the influence of social-psychological factors (e.g., personal responsibility, reputation concerns) on their judgments. In Experiment 1, we manipulate assigned purpose by informing one group of participants that they will be asked to recommend whether to continue or discontinue a project (relevant purpose), another that they will be asked to recommend the structure for a management compensation plan

(irrelevant purpose), and a third that they will be asked to provide input regarding a variety of issues (general purpose). After reading identical case materials about the company and one of its projects but before taking a memory test, all participants make two recommendations: one regarding whether or not to continue the (failing) project and the other regarding how to structure a management compensation plan.

Consistent with expectations, participants in the relevant-purpose condition were more likely to recommend discontinuing the failing project than were participants in either the irrelevant-purpose or the general-purpose conditions. Moreover, a mediation analysis confirms that differences in the likelihood of recommending project discontinuation across experimental conditions were driven by differences in memory for specific, critical threats to project viability. These results suggest that cognitive factors play a causal role in escalation of commitment.

In Experiment 1, irrelevant purpose condition participants were less likely to remember information regarding critical threats to project viability than were relevant purpose condition participants, and they escalated commitment to the failing project as expected. Participants assigned an irrelevant purpose apparently recommended project continuation because they lacked accessible knowledge of critical threats to project viability. However, general purpose condition participants were equally as likely to remember the critical threats to project viability as relevant purpose condition participants, yet they were more likely to escalate commitment to the failing project than were relevant purpose condition participants.

A potential explanation for general purpose condition participants' failure to use information about critical threats to the project's viability to recommend discontinuing it is that, although they accessed this information from memory when cued, it was not spontaneously

accessible when they made the project-continuation recommendation. If additional cognitive effort could increase the likelihood that participants in the general-purpose condition would access information about critical threats to project viability from memory when making the project-continuation recommendation, then a justification requirement is likely to improve decision quality (Kennedy 1993; Tetlock 1985). Thus, in Experiment 2, we examine the influence of a requirement to justify (present or absent) on the recommendations made by participants in general-purpose and irrelevant-purpose conditions. We expected the justification requirement to reduce escalation of commitment in the former group (who, in Experiment 1, accessed from memory information regarding the critical threats to project viability when cued), but not in the latter group (who did not).

Consistent with Experiment 1 results, general purpose condition participants more accurately remembered information regarding the critical threats to project viability than did participants in the irrelevant-purpose condition. As expected, the justification requirement did not increase the likelihood that irrelevant purpose condition participants would recommend discontinuing the failing project. Moreover, the justification requirement was associated with a *decreased* likelihood that general purpose condition participants would recommend project discontinuation, contrary to expectations. These results suggest that additional cognitive effort likely will not reduce escalation of commitment when individuals use mental representations created for purposes other than making project-continuation decisions for that task, even when those individuals have encountered decision-relevant information.

We provide evidence that cognitive factors (i.e., mental representations) play a role in explaining escalation of commitment. The cognitive factors that we investigate are independent

of personal responsibility and other social-psychological factors known to promote escalation behavior. Therefore, we expect these cognitive factors to exaggerate escalation tendencies caused by managers' personal responsibility and reputation concerns. Understanding the causes of escalating commitment is important because it may suggest ways to reduce these tendencies, and thereby improve managers' abilities to use accounting information for optimal resource allocation. For example, one strategy might involve restructuring project-management tasks to include routine, independent reviews of all project-relevant information for the explicit purpose of assessing project viability and merit.

## **2. Theory and hypotheses – Experiment 1**

### ***Escalation of commitment***

Escalation of commitment occurs when individuals or organizations persist in a course of action even though losses have been suffered (e.g., a course of action is not working as expected), there is an opportunity to persist or withdraw, and the consequences of persistence or withdrawal are uncertain (Staw 1997). For example, when organizations learn that a newly developed product is neither profitable nor appears likely to become profitable in the future, continued investment in that product constitutes escalation of commitment (see Staw 1997).<sup>1</sup>

Several explanations have been proposed for individuals' escalation behavior (see Brockner 1992 and Staw 1997 for reviews). First, receiving negative feedback about chosen courses of action likely causes individuals responsible for those decisions to escalate their commitment to them in an attempt to justify their original decisions (e.g., Staw 1976; Bazerman et al. 1982; Bazerman et al. 1984; Schoorman 1988 for individuals; and Bazerman et al. 1984 for groups).<sup>2</sup> However, other studies demonstrate that personal responsibility for an initial decision

is not required to induce escalation of commitment (Bobocel and Meyer 1994; Jeffrey 1992; Schoorman and Holahan 1996).<sup>3</sup> Second, prospect theory predicts that a decision maker will view a decision made subsequent to the receipt of negative feedback as a choice between two losses (Kahneman and Tversky 1979) and thus, risk-seeking behavior in the form of escalating commitment to a failing course of action may occur (Whyte 1986).<sup>4</sup> Third, the mere expenditure of resources over time may evoke social-psychological motives to avoid appearing wasteful and thus, individuals may escalate their commitment to failing courses of action when sunk costs exist (Arkes and Blumer 1985).<sup>5</sup> Finally, the low salience of opportunity costs relative to out-of-pocket costs when making project-continuation decisions may contribute to escalation behavior (Northcraft and Neale 1986).<sup>6</sup>

The majority of studies investigating escalating commitment examine social-psychological causes (see Brockner 1992 and Staw 1997). Management is fundamentally a social activity, but managers also spend a significant amount of time absorbing, processing, and disseminating information (Walsh 1995). Managers' mental representations of information are asserted to be linked to managerial choice and action (Gavetti and Levinthal 2000). Therefore, factors influencing managers' abilities to process and store information likely will influence their judgments, including those about whether to continue allocating resources to failing projects. In particular, high-quality project-continuation decisions require managers to choose among alternative courses of action by evaluating information regarding the future costs and benefits associated with each alternative (e.g., Bazerman 1994). We argue that if the mental representations managers use to make project-continuation decisions are constructed for purposes other than processing and storing information regarding the future costs and benefits

associated with a chosen course of action, escalation of commitment likely will result. We first develop our hypotheses regarding the effect of an assigned purpose on the mental representations individuals construct for a decision-making task, and then we develop hypotheses about how escalation of commitment results from the use of mental representations constructed for purposes other than making project-continuation decisions.

### ***The influence of assigned purpose on mental representations***

A mental representation is a cognitive structure that supports understanding, reasoning, and prediction (Markman and Gentner 2001). Mental representations facilitate efficient and effective information processing by providing a structure in memory for information storage and retrieval (Koehler 1991; Wyer and Srull 1980). Because decision-making strategies and decision-relevant information vary with decision context (Rettinger and Hastie 2001), constructing mental representations for information processing is highly dependent upon how one expects to use the information at the time it is encountered (e.g., Wyer and Srull 1980; Wyer and Gordon 1982; Srull and Wyer 1989).

An accepted view of mental representations is that they include “slots” for decision-relevant information, and the placement of information in these slots depends, in part, on the purpose for which the mental representation was constructed (Wyer and Srull 1980). Moreover, the nature of these slots influences the information that is sought out and stored (Koehler 1991). For example, the mental representation a decision maker constructs is likely to include slots for information that is important for accomplishing his purpose. Consequently, purpose-relevant information is more likely to be included in the mental representation and thus, be available in

memory for subsequent recall than purpose-irrelevant information (e.g., Pichert and Anderson 1977; Anderson and Pichert 1978).

Determining whether a project should be continued or discontinued requires assessing project viability. We expect that a manager assigned the purpose of making a project-continuation decision will construct a mental representation that includes slots for such information and will seek information to fill those slots. In the case of a failing project, we expect that the mental representation of a manager assigned the purpose of making a project-continuation decision typically would include information about critical threats to project viability.

On the other hand, a manager assigned a purpose other than making a project-continuation decision, for example reducing labor costs, will construct a mental representation for that purpose. This mental representation likely will not facilitate the search for information about project viability and may not be amenable to processing or to storing information about critical threats to project viability even when it is encountered. Further, the likelihood that information is retrieved and used in decision making depends on which slot of the mental representation is searched (Wyer and Srull 1980). Thus, even if the manager acquires information about critical threats to project viability, it may not be stored in a slot in memory that facilitates its spontaneous retrieval and use when making subsequent project-continuation decisions.

We expect that participants assigned the purpose of recommending whether a project should be continued or discontinued will construct mental representations that facilitate processing and storing information relevant to this decision. They will thus attend to information

related to project viability, including critical threats to it, acquire this information, and store it in memory. However, decision makers assigned either no specific purpose or a specific, alternative purpose are expected to construct mental representations less amenable to processing and storing information relevant to a project-continuation decision. Consequently, these participants will be less likely than participants assigned the purpose of recommending whether a project should be continued or discontinued to acquire and store information about critical threats to project viability in memory. Following prior research, we use memory-test results to measure participants' mental representations (e.g., Christ 1993; Rettinger and Hastie 2001). Our first set of hypotheses (in alternative form) follows:

*HYPOTHESIS 1a. Participants assigned the purpose of recommending whether a project should be continued or discontinued are more likely to accurately remember critical threats to project viability than will participants assigned no specific purpose.*

*HYPOTHESIS 1b. Participants assigned the purpose of recommending whether a project should be continued or discontinued are more likely to accurately remember critical threats to project viability than will participants assigned a specific, alternative purpose.*

### ***The influence of mental representations on judgment***

Judgment is influenced by the manner in which information is processed and stored in memory (e.g., Anderson et al. 1980; Wyer and Srull 1980; Rettinger and Hastie 2001), its subsequent availability, and the likelihood of its retrieval (e.g., Tversky and Kahneman 1973; Reyes et al. 1980; Sherman et al. 1983). Information that is disproportionately available in memory has a correspondingly disproportionate impact on judgment (e.g., Tversky and Kahneman 1973; Reyes et al. 1980; Hastie and Park 1986), and information that is not available in memory cannot influence subsequent judgments.

Maintaining the status quo is generally more socially acceptable than changing it (e.g., Samuelson and Zeckhauser 1988; Tetlock and Boettger 1994). Accordingly, when making project continuation decisions, we expect that participants who have read information about an existing project are not likely to propose canceling it (and altering the status quo) unless they have information accessible from memory that supports discontinuance. Since participants assigned the purpose of making a project-continuation recommendation are posited to build mental representations specifically designed to acquire and store such information, we expect that these participants will be more likely to accurately remember critical threats to project viability (H1a and H1b). Because these participants are able to access information about the critical threats to project viability from memory, we expect that they will be more likely to recommend that a failing project be discontinued than will participants assigned either no specific purpose or a specific, alternative purpose. Our hypotheses, in alternative form, are stated below.

*HYPOTHESIS 2a. Participants assigned the purpose of recommending whether a project should be continued or discontinued are more likely to recommend discontinuing a failing project than will participants assigned no specific purpose.*

*HYPOTHESIS 2b. Participants assigned the purpose of recommending whether a project should be continued or discontinued are more likely to recommend discontinuing a failing project than will participants assigned a specific, alternative purpose.*

Figure 1 summarizes our predictions. Link A represents our prediction that decision makers' mental representations differ depending upon their assigned purposes (H1a and H1b). Link B reflects our prediction that assigned purpose influences project-continuation recommendations (H2a and H2b). Link C represents our theoretical assertion that the effect of

assigned purpose on project-continuation recommendations operates via its effect on mental representations. We report a mediation analysis after presenting our main results to test this assertion.

### **3. Experimental design and procedures – Experiment 1**

#### ***Participants***

Participants were 84 senior-level undergraduate students enrolled in a managerial accounting course at a major university.<sup>7</sup> Participants were required to make project-investment and management-compensation decisions in the experimental materials. Both issues had been previously covered in the course, and students were familiar with task requirements. Two participants did not complete all experimental materials, so their data were omitted from reported analyses.

#### ***Materials and design***

We asked participants to assume the role of an outside consultant hired to make recommendations to a company's Board of Directors. As noted above, all participants made two recommendations: one regarding whether or not to continue a (failing) project and the other regarding how to structure a management compensation plan. We manipulated assigned purpose in the experimental instructions by varying the nature of the recommendation participants were informed that they would be asked to make prior to receiving information. Assigned purpose was manipulated at three levels: relevant, irrelevant, and general. In the relevant-purpose condition, participants were told that they would be asked to recommend whether an ongoing project should be continued or discontinued. In the irrelevant-purpose condition, participants were told that they would be asked to recommend a structure for a management compensation

plan. These participants were told that because management compensation was based in part on project performance, information regarding one of the company's ongoing projects was provided for their reference. In the general-purpose condition, participants were told that they would be asked to provide input to the Board regarding a variety of issues. Regardless of assigned purpose, participants were instructed to pay attention to all presented information.

Following the purpose manipulation, we provided all participants with identical information about the company and one of its ongoing projects. Company information included cost of capital, capital structure, and information about the organization of management teams. Project information included sales projections, results of a consumer-satisfaction survey for the product, budgeted and actual production data, budgeted and actual financial data, and summaries of reports on the project from several members of management. The project had two critical shortcomings (i.e., critical threats to project viability). First, production problems had persisted since inception such that abnormal spoilage far exceeded the budget. The production manager's report gave no reason to believe that these problems would be resolved soon. Second, a high selling price had resulted in lower-than-expected sales. As a result of these issues, ROI was negative for the first two years of the project and was expected to be zero for the current year. Management had made optimistic, expected, and pessimistic ROI predictions, and actual results fell short of even the pessimistic predictions. Accounting information clearly indicated a failing project. The product was expected to become obsolete in 2.5 years, so there would be very little time to recoup any losses.

Participants were not allowed to take notes and were told that they would not have access to the case information when they made their recommendations. Therefore, participants were

allowed an unlimited amount of time to review the company and project information thoroughly. When participants indicated that they were finished reviewing the information, it was taken from them and they made their recommendations. To preserve task realism, participants made the recommendation related to their assigned purpose first in the relevant-purpose and the irrelevant-purpose conditions. Recommendation order was randomized in the general-purpose condition. Participants made their second recommendation on a separate page prefaced by, “At the Board meeting a second issue arose...” In addition to recommending whether or not the (failing) project should be continued, participants indicated their confidence in the appropriateness of their recommendations on a Likert scale anchored by the labels “not at all confident” (0) and “completely confident” (10). Participants’ project-continuation recommendations and a continuous variable constructed from these recommendations and participants’ confidence assessments are the main dependent measures for tests of H2a and H2b.

We included in the experimental materials two features designed to reduce the influence of social-psychological factors on participants’ recommendations in order to isolate the influence of the cognitive factors of interest. First, we assigned participants to the role of outside consultant. This step 1) eliminates personal responsibility for the initial project-implementation decision, thereby reducing self-justification motives to escalate commitment and 2) removes any motives to protect the reputation of a fellow manager responsible for the project-implementation decision. Second, we asked all participants to complete an individual difference instrument, Snyder’s (1974) Self-Monitoring Scale. The self-monitoring scale (SM) measures the extent to which individuals are willing and able to identify and to act on social cues in managing their self-presentational behavior (Snyder 1974; Snyder and Gangestad 1986; Schlenker and Weigold

1992; Gangestad and Snyder 2000). Because deviating from the status quo is viewed as less socially desirable than maintaining it (e.g., Samuelson and Zeckhauser 1988; Tetlock and Boettger 1994), we expect that participants most sensitive to social-acceptability issues (i.e., high self-monitors) will be less willing to recommend that a failing project be discontinued (i.e., more likely to maintain the status quo) than will those less sensitive to such cues (i.e., low self-monitors). Accordingly, we control for participants' social motivations to maintain the status quo where possible in our analyses of participants' project-continuation recommendations (i.e., tests of H2a and H2b).

The self-monitoring scale also served as a distracter task to clear participants' short-term memory of company and project information. Following that test, participants completed a free-recall task and took a ten-item memory test (see Appendix A). Memory-test items were constructed in true/false format and concerned specific, project-related information, including the critical threats to project viability. Whether participants correctly remembered both critical threats to project viability is the dependent measure for tests of H1a and H1b.

#### **4. Results and discussion – Experiment 1**

##### ***Tests of hypotheses about mental representations***

We expected that participants provided with the (relevant) purpose of making a project-continuation recommendation would construct mental representations amenable to acquiring and storing project-viability information. Thus, we hypothesized that participants in the relevant-purpose condition would be more likely to accurately remember the critical threats to project viability than would participants in either the general-purpose (H1a) or the irrelevant-purpose (H1b) conditions. Note that we do not expect relevant purpose condition participants' overall

memory for project-related information to be superior to that of other participants, perhaps indicating that relevant purpose condition participants exerted greater effort on the task. In contrast, we expect that the memories of all participants will be equally accurate overall, but that relevant purpose condition participants will be more likely to accurately remember information about the critical threats to project viability than will general-purpose or irrelevant-purpose condition participants.

As mentioned above, the project described in our materials was clearly failing due to two critical threats to project viability: excessive abnormal spoilage and an extremely high selling price. We computed participants' accuracy on the two memory-test items directly related to these critical threats to project viability (questions 7 and 8 in Appendix A). Although these "knowledge scores" could range from zero to two, all participants scored at least one.

We test Hypotheses 1a and 1b using 2 (knowledge score, 1 or 2) x 2 (experimental condition) contingency tables. Knowledge scores were uniformly high in the relevant-purpose and general-purpose conditions (86% and 85%, respectively). Accordingly, H1a is not supported (Fisher's Exact Test,  $p = 0.293$ ). However, only 62% of participants in the irrelevant-purpose condition answered both items correctly. The difference between the 62% rate in the irrelevant-purpose condition and the 86% rate in the relevant-purpose condition is significant (Fisher's Exact Test,  $p = 0.029$ ). Participants in the relevant-purpose condition were more likely to accurately remember information about the critical threats to project viability than were participants in the irrelevant-purpose condition and H1b is supported. As expected, overall memory for project information (as measured by participants' scores on all 10 memory-test items) did not differ across experimental conditions ( $F_{2,77} = 0.67$ ,  $p = 0.858$ ). Mean (standard

deviations of) total memory scores were 7.42 (1.39), 7.44 (1.64), and 7.24 (1.41) for the general-purpose, irrelevant-purpose, and relevant-purpose conditions, respectively.<sup>8</sup> Participants in all conditions had equally accessible knowledge of a range of project-related information, but those in the relevant-purpose condition were better able to access information about the critical threats to project viability when cued than were participants in the irrelevant-purpose condition.

### ***Tests of hypotheses about project-continuation recommendations***

We use two procedures to test H2a and H2b. First, we use contingency tables to determine whether the proportion of recommendations to discontinue the project was greater in the relevant-purpose condition than in either the general-purpose or the irrelevant-purpose conditions. Table 1 presents the proportions (percentages) of participants recommending discontinuing the failing project. Our first set of tests does not control for self-monitoring tendencies; however, we ensure that high and low self-monitors were randomized across experimental conditions successfully by performing a median split on the self-monitoring variable and testing for the independence of experimental condition and self-monitoring tendency.<sup>9</sup> Self-monitoring tendency is independent of experimental condition ( $\chi^2 = 0.33, p = 0.849$ ), suggesting that any differences in recommendations across experimental conditions are unlikely to be caused by systematic differences in participants' tendencies to differentially respond to social-acceptability issues.

Table 1 reveals that 43% of all participants recommended that the failing project be discontinued. Thus, recommendations made by 57% of all participants exhibited escalation of commitment. In the general-purpose and the irrelevant-purpose conditions, a minority of participants recommended that the project be discontinued (37% for general purpose, 27% for

irrelevant purpose). However, the majority of participants in the relevant-purpose condition recommended that the project be discontinued (62%). Statistical tests confirm that the proportion of recommendations to discontinue the project was greater in the relevant-purpose condition than in either the general-purpose or the irrelevant-purpose conditions (Fisher's Exact Test,  $p = 0.038$  and  $p = 0.007$ , respectively). Thus, H2a and H2b are supported.

For the second set of hypothesis tests, we construct a continuous dependent variable by multiplying participants' reported confidence in the appropriateness of their recommendations by a dummy variable representing the recommendation made (-1 for a continue recommendation and +1 for a discontinue recommendation). Thus, values for this continuous dependent variable (RECOMMEND) could range from -10 (completely confident that continuing the project is the appropriate recommendation) to +10 (completely confident that discontinuing the project is the appropriate recommendation). This measure is important because confidence is likely to influence the strength with which a decision maker advocates his recommendation. Further, using RECOMMEND for our analysis allows us to explicitly control for participants' sensitivity to social-acceptability issues by including the self-monitoring variable (SM) that is based on a median split (described earlier) in our statistical model.

Table 2, Panel A presents an ANOVA model for RECOMMEND, controlling for SM. As expected, low self-monitors made stronger discontinue recommendations than did high self-monitors (mean (standard deviation) of RECOMMEND is 0.88 (6.44) for low SM and -2.30 (6.04) for high SM,  $F_{1,78} = 4.98$ ,  $p = 0.029$ ). The ANOVA also reveals a significant effect of experimental condition on the strength of recommendations ( $F_{2,78} = 3.66$ ,  $p = 0.030$ ). Means (standard deviations) of RECOMMEND are -1.65 (6.32), -2.67 (5.65), and 1.71 (6.51) for the

general-purpose, the irrelevant-purpose, and the relevant-purpose conditions, respectively. Planned contrasts based on the ANOVA reveal that, controlling for SM, participants in the relevant-purpose condition made stronger discontinue recommendations than participants in both the general-purpose and irrelevant-purpose conditions ( $t_{78} = 1.94, p = 0.028$  and  $t_{78} = 2.58, p = 0.006$ , respectively).<sup>10</sup> These results provide additional evidence supporting H2a and H2b.

### *Mediation analysis*

Figure 1 presents a model of our theoretical assertion that participants' assigned purposes influence their recommendations through the effect of purpose on mental representations. To more directly examine whether memory for the critical threats to project viability accounts for the relation between assigned purpose and participants' project-continuation recommendations, we perform a mediation analysis (Baron and Kenny 1986). Knowledge scores (our measure of mental representations) mediate the relation between assigned purpose and recommendations if three conditions can be established: (a) assigned purpose is associated with knowledge scores, (b) variations in knowledge scores are associated with variations in recommendations, and (c) after controlling for variations in knowledge scores, the previously significant relation between assigned purpose and recommendations is no longer significant.

Assigned purpose is significantly associated with knowledge scores ( $\chi^2 = 6.07, p = 0.048$ ), satisfying condition (a). We estimate an ANOVA model for participants' recommendations that includes knowledge scores to test for mediation conditions (b) and (c). We use the continuous dependent variable (RECOMMEND) for this analysis to avoid model-estimation problems.<sup>11</sup> We also control for self-monitoring (i.e., SM).

Table 2, Panel B shows the results of the ANOVA model in which knowledge score (i.e., whether both critical threats to project viability were accurately remembered) is included as a main effect and is allowed to interact with experimental condition (i.e., assigned purpose). In that model, knowledge score is significantly associated with recommendations ( $F_{1,75} = 4.86, p = 0.030$ ), satisfying condition (b). In addition, experimental condition (which is significantly associated with recommendations in Table 2, Panel A) is no longer significantly associated with recommendations ( $F_{2,75} = 0.12, p = 0.890$ ), satisfying condition (c). This analysis confirms that the effect of purpose on project-continuation recommendations is mediated by the presence of accessible knowledge about the critical threats to project viability.<sup>12</sup> Interestingly, SM retains its significance ( $F_{1,75} = 4.41, p = 0.039$ ), indicating that the influence of social-psychological factors on project-continuation recommendations is not mediated by project-viability knowledge.<sup>13</sup>

In sum, we find that assigned purpose influences the likelihood that participants acquire and use knowledge of the critical threats to project viability to make project-continuation recommendations. Participants assigned the purpose of recommending whether the project should be continued or discontinued and participants assigned a general purpose (i.e., to provide input to the Board on a variety of issues) were more likely to retain knowledge of the critical threats to project viability in memory than were participants assigned a specific alternative purpose (i.e., to recommend a management compensation plan). Knowledge of critical threats to project viability, along with sensitivity to social-acceptability issues, influenced the likelihood that participants escalated commitment to the failing project.

## 5. Theory and hypotheses – Experiment 2

In Experiment 1, participants in the irrelevant-purpose condition were less willing to recommend discontinuing the project than were participants in the relevant-purpose condition, apparently because the former lacked knowledge of the critical threats to project viability. An unexpected result from Experiment 1 is that although the knowledge scores of participants in the general-purpose condition did not differ from those of participants in the relevant-purpose condition, general purpose condition participants were less likely to recommend discontinuing the project than were relevant purpose condition participants. One possible explanation for the failure of general purpose condition participants to recommend project discontinuation in Experiment 1 is that although these participants retained information about critical threats to project viability in memory (reflected in their knowledge scores), this knowledge was not spontaneously accessible when they made their project-continuation recommendations.

A large body of research demonstrates that motivating individuals to be accurate induces a more effortful, balanced search of memory for relevant evidence and use of more effort-intensive, balanced, and systematic evaluation procedures (e.g., see Kunda 1990). Requiring individuals to justify a decision to a party with unknown preferences is a common method for creating motives for accuracy and reliably inducing the effects listed above (Kunda 1999; Tetlock 1985). Thus, in cases where deficiencies in judgment can be mitigated by the application of additional effort, a requirement to justify a decision to an unknown other predictably improves decision quality (Kennedy 1993; Tetlock 1985).

We expect that requiring participants to justify their recommendations to a Board with unknown preferences will cause them to engage in a more effortful search of memory, access

project-related data retained in memory, and use this information to make high-quality project-continuation recommendations. General purpose condition participants are likely to have knowledge of the critical threats to project viability in memory (demonstrated in Experiment 1). Thus, we expect that requiring them to justify their recommendations will motivate a more thorough and effortful search of memory. A more effortful search should increase the likelihood that general purpose condition participants will access and use knowledge of the critical threats to project viability when making project-continuation recommendations, increasing the likelihood that they recommend discontinuing the failing project. In contrast, because irrelevant purpose condition participants are less likely to have knowledge of the critical threats to project viability in memory (demonstrated in Experiment 1), application of additional effort to memory search is unlikely to be productive for these participants. Thus, we expect that the justification requirement will not affect the likelihood that irrelevant purpose condition participants will recommend discontinuing the failing project. Our hypotheses, in alternative form, follow:

*HYPOTHESIS 3a. Requiring participants assigned no specific purpose to justify their project-continuation recommendations will increase the likelihood that they will recommend discontinuing the failing project.*

*HYPOTHESIS 3b. Requiring participants assigned a specific, alternative purpose to justify their project-continuation recommendations will not change the likelihood that they will recommend discontinuing the failing project.*

## **6. Experimental design and method – Experiment 2**

### ***Participants***

Participants were 71 senior-level undergraduate accounting majors at a second major university. Managerial accounting classes covering material relevant to making project-investment and management-compensation decisions (the two types of recommendations

required in the instrument) were prerequisites for the course, so participants were familiar with task requirements.

### ***Materials and design***

The case materials and procedures were identical to those used in Experiment 1 with the exception that dates were updated and a justification requirement was added to some conditions. Purpose (general, irrelevant) and justification requirement (present, absent) were manipulated between subjects. The two levels of the purpose manipulation were as described for Experiment 1. We manipulated the justification requirement by providing some participants with the following additional instruction, after they reviewed the case materials, but before they made their recommendations, “When making your judgment, keep in mind that the Board of Directors is relying on you to provide them with a sound recommendation. The Board will require you to justify your recommendation in a convincing manner (emphasis in original).” When they made their recommendations, these participants also were instructed to, “...explain your recommendation to the Board in the space provided.” These three statements constitute the only difference in experimental materials for the two justification conditions.

## **7. Results and discussion – Experiment 2**

### ***Preliminary tests***

Before testing our hypotheses, we verify that general purpose condition participants had more accurate memory for the critical threats to project viability than did irrelevant purpose condition participants. Knowledge scores were more dispersed than in Experiment 1, with participants correctly responding to none, one, or both items. However, consistent with Experiment 1 results, general purpose condition participants answered both items correctly more

frequently than did irrelevant purpose condition participants (32/34 = 94% for the general-purpose condition versus 27/36 = 75% for the irrelevant-purpose condition, Fisher's Exact Test,  $p = 0.024$ ).<sup>14</sup> Also as in Experiment 1, overall memory for project information did not differ between the two groups (mean (standard deviation of) total memory scores were 7.55 (1.46) for the general-purpose condition and 7.18 (1.63) for the irrelevant-purpose condition,  $F_{1,62} = 0.97$ ,  $p = 0.340$ ). Despite significant differences in memory for the critical threats to project viability, general purpose condition participants were no more likely to recommend discontinuing the failing project than were irrelevant purpose condition participants (22/34 = 65% of the participants recommended discontinuing the project in the general-purpose condition versus 22/36 = 61% in the irrelevant-purpose condition, Fisher's Exact Test,  $p = 0.186$ ). This finding is consistent with Experiment 1 results.<sup>15</sup>

### ***Tests of hypotheses about justification***

Table 3 presents the proportions (percentages) of participants recommending discontinuing the failing project by experimental condition. As expected, the justification requirement had no effect on the likelihood that irrelevant purpose condition participants would recommend discontinuing the failing project (Fisher's Exact Test,  $p = 0.258$ ), supporting H3b. The justification requirement was associated with the likelihood that general purpose condition participants would recommend discontinuing the failing project (Fisher's Exact Test,  $p = 0.030$ ). However, the effect was in the opposite direction to that predicted. General purpose condition participants who justified their recommendations were *less* likely to recommend discontinuing the project than those who did not justify, and so H3a is not supported.<sup>16</sup>

### *Additional analysis*

To understand why participants in the general-purpose condition were less likely to recommend discontinuing the failing project when the justification requirement was present, we examine the explanations these participants provided for their recommendations.<sup>17</sup> Explanations were parsed into individual reasons, which were identified as either supporting the project (e.g., customer satisfaction is high), opposing the project (e.g., spoilage is higher than expected), or neither (e.g., plans, conclusions, or overall evaluative statements rather than positive or negative aspects of the project).<sup>18</sup>

Participants provided 0 to 5 reasons, with a mean (standard deviation) of 2.14 (1.33). On average, participants provided 1.67 reasons opposing the project and 0.47 reasons supporting the project. Table 4 presents ANOVA models examining the numbers of total reasons, supporting reasons, and opposing reasons by project-continuation recommendation (continue vs. discontinue) and experimental condition (general-purpose vs. irrelevant-purpose).

The analysis in Table 4 reveals that the number of reasons participants provided depended on the nature of their recommendations. The significant effect of recommendation reported in Panel A of Table 4 reflects that when the justification requirement was present, participants recommending project discontinuation provided more reasons for their recommendation than did participants recommending project continuation (mean (standard deviation) 2.65 (1.31) versus 1.50 (1.10), respectively,  $F_{1,32} = 7.55, p = 0.010$ ). Panel B of Table 4 reveals that participants recommending project continuation provided more reasons supporting the project than did participants recommending project discontinuation (mean (standard deviation) 1.06 (0.93) versus 0.00 (0.00),  $F_{1,32} = 24.72, p < 0.001$ ). However, the analysis of

opposing reasons (Table 4, Panel C) reveals the strongest effect for nature of recommendation. Participants recommending project discontinuation provided more reasons opposing the project than did participants recommending project continuation (mean (standard deviation) 2.65 (1.31) versus 0.44 (0.51),  $F_{1,32} = 39.12, p < 0.001$ ). Figure 2 graphs cell means for the numbers of reasons opposing the project provided by participants in each experimental condition by the nature of the recommendation. On average, participants required to justify their recommendations did not recommend project discontinuation unless they could provide 2.65 reasons opposing the project, yet participants provided only 1.06 reasons supporting the project when they recommended project continuation.

In light of the results presented in Table 4 and Figure 2, it is not entirely surprising that general purpose condition participants were less likely to recommend discontinuing the failing project when the justification requirement was present than when it was absent. Prior research shows that participants in high-visibility conditions are more likely to choose a publicly-justifiable strategy that makes few assumptions about the future than participants in low-visibility conditions (Conlon and Wolf 1980). Thus, demands of impression management may reinforce the tendency of decision makers to avoid changes when participants are accountable for the outcomes of their decisions (Tetlock and Boettger 1994).<sup>19</sup> In Experiment 2, therefore, the justification requirement may have not only increased cognitive effort, but may have also increased participants' sensitivity to impression management or other social-psychological factors, perhaps increasing the number of reasons participants believed they needed in order to change the status quo. The social-psychological demands were likely more pronounced for those participants assigned to be prepared to make recommendations on a variety of issues ( i.e.,

general purpose participants) than for those who were not anticipating a project-continuation decision (i.e., irrelevant purpose participants). These results demonstrate that encouraging increased effort is unlikely to overcome the limitations introduced when mental representations constructed for other purposes are applied to subsequent judgment tasks.

## **7. Summary and conclusions**

In this paper we examine a cognitive explanation for managerial and organizational escalation of commitment to failing projects. We hypothesize that the purpose assigned to individuals before they encounter information relevant to making a project-continuation decision influences whether they are likely to construct mental representations amenable to acquiring and storing project-viability information, and consequently, whether individuals escalate commitment to failing projects. In Experiment 1, we demonstrate that individuals assigned different purposes before encountering an identical set of project-related information make different project-continuation recommendations and that the differences in recommendations are caused by differences in mental representations. We interpret our results to suggest that managers responsible for day-to-day project management are unlikely to construct mental representations amenable to processing and storing project-viability information. Lacking memory access to the accounting and other information most relevant to making high-quality project-continuation decisions, managers continue to allocate resources to unprofitable projects—the phenomenon of escalating commitment.

In Experiment 2, we demonstrate that encouraging individuals to work harder by requiring them to justify their recommendations does not increase the likelihood that participants assigned an irrelevant purpose or no specific purpose recommend discontinuing the failing

project. These results suggests that increasing effort levels via justification after mental representations are established is unlikely to overcome the effects of inappropriate mental representations on decision performance, and may even *increase* escalation behavior.

Taken together, results from both experiments suggest that cognitive and social-psychological factors play joint roles in explaining managerial and organizational tendencies to escalate commitment to failing projects. To our knowledge, ours is the first study to demonstrate the role of memory and mental representations in explaining escalation of commitment. Our theory and results suggest that strategies designed to reduce the tendencies of managers to continue to support the allocation of resources to poorly performing projects may require restructuring project-management tasks to include routine, independent assessments of viability and merit. Future research could examine the effectiveness of such strategies.

Our study is subject to several limitations. First, managers work in a complex environment and face incentives not easily replicated in the laboratory, and these factors may limit the generalizability of our theory. For example, managers' compensation contracts may provide monetary penalties for the continued allocation of resources to unprofitable projects. Monetary incentives are likely to motivate higher levels of effort; however, given that we demonstrate a causal role for cognitive factors in escalating commitment, and given our Experiment 2 results, it appears unlikely that such incentives would improve decision performance.

Our use of student participants is also a potential limitation of our study, given our interest in managerial and organizational escalation of commitment. This concern is mitigated by the fact that the purpose of our study is to test the theory that different information-processing

objectives (i.e., purposes) lead to differences in project knowledge acquisition and retention, which, consequently lead to different project-continuation decisions. Our goal is *not* to identify whether escalation of commitment occurs in a professional population or to ascertain levels of escalation behavior. Indeed, prior research has established that escalation decision behavior occurs for MBA students (e.g., Harrell and Harrison 1994), executive MBA students (e.g., Harrison and Harrell 1993), and professionals (e.g., auditors (Jeffrey 1992), bankers (Staw et al. 1997), and others (Ross and Staw 1993)). In testing theories that do not rely on specific features of the population of interest, it is efficient to utilize student participants, and we see no reason that our theory would not generalize to managerial decision-making behavior. Moreover, Vera-Munoz et al. (2001) present evidence that management accounting experience improves decision performance (in an opportunity cost identification task) only when the appropriate mental representation is chosen. Because our manipulation is posited to influence the construction of a mental representation, managerial experience should not influence decision behavior in this task. For example, even very experienced managers assigned to develop a compensation plan are unlikely to choose mental representations appropriate for acquiring and storing information relevant to making project-continuation decisions.

In their natural environments, managers likely receive and process information relevant to more than one explicit purpose at a time. We examine the influence of one purpose (relevant or irrelevant) or no specific purpose (general) on participants' mental representations and decisions. One extension of our study would be to provide participants with multiple explicit purposes simultaneously (i.e., relevant and irrelevant purposes). We expect that compromise mental representations would be developed when multiple information-processing objectives are

present, and that these mental representations would not be ideal for processing and storing information relevant to project-continuation decisions. Consistent with this idea, prior research has demonstrated that memory for problem-relevant information is lower when attention is divided (e.g., Ricchiute 1997).

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**Table 1**

*Proportion (Percentage) of Recommendations to Discontinue the Project  
by Experimental Condition  
Experiment 1*

| Condition          | Recommendations to Discontinue<br>the Project |
|--------------------|---|
| General Purpose    | 10/27<br>(37.0)                               |
| Irrelevant Purpose | 7/26<br>(26.9)                                |
| Relevant Purpose   | 18/29<br>(62.1)                               |
| Column Total       | 35/82<br>(42.7)                               |

This table reports the proportions (percentages) of participants recommending that the failing project be discontinued in Experiment 1.

Condition was manipulated as the purpose participants were assigned prior to examining the company- and project-related data. In the general-purpose condition, participants were told they would be asked to make recommendations regarding a variety of issues. In the irrelevant- (relevant-) purpose condition, participants were told their primary purpose was to make a recommendation regarding the structure of a management compensation plan (the continuation or discontinuation of a project).

**Table 2**

*Analysis of Relationships among Recommendations, Experimental Conditions, Knowledge Scores, and Self-Monitoring  
Experiment 1*

**Panel A. ANOVA Model for RECOMMEND**

| Source          | df | SS      | MS     | F    | P     |
|-----------------|----|---------|--------|------|-------|
| Condition       | 2  | 266.35  | 133.18 | 3.66 | 0.030 |
| Self-Monitoring | 1  | 181.19  | 181.19 | 4.98 | 0.029 |
| Residual        | 78 | 2839.45 | 36.40  |      |       |

**Panel B. ANOVA Model for RECOMMEND including Knowledge Score**

| Source                      | df | SS      | MS     | F    | p     |
|-----------------------------|----|---------|--------|------|-------|
| Condition                   | 2  | 7.87    | 3.94   | 0.12 | 0.890 |
| Self-Monitoring             | 1  | 148.53  | 148.53 | 4.41 | 0.039 |
| Knowledge Score             | 1  | 163.58  | 163.58 | 4.86 | 0.030 |
| Condition X Knowledge Score | 2  | 188.89  | 94.45  | 2.81 | 0.067 |
| Residual                    | 75 | 2523.80 | 33.65  |      |       |

This table reports analyses of the strength of recommendations to discontinue the failing project in Experiment 1. The dependent measure ranges from –10 (completely confident that continuing the project is the appropriate recommendation) to +10 (completely confident that discontinuing the project is the appropriate recommendation). Panel A shows an ANOVA model without knowledge scores, and Panel B shows a model that incorporates knowledge scores.

The Condition manipulation is described in Table 1.

Self-Monitoring reflects a median split on the Snyder (1974) self-monitoring scale. Higher self-monitors are more willing and able to identify and act on social cues in managing their self-presentational behavior than are lower self-monitors.

Knowledge Score reflects participants' accuracy on the two memory-test items directly related to the critical threats to project-viability (see Appendix A). Those participants categorized as higher knowledge had 100% accuracy and those categorized as lower knowledge had 50% accuracy.

**Table 3**

*Proportion (Percentage) of Recommendations to Discontinue the Project  
by Experimental Condition  
Experiment 2*

|                              | General-Purpose<br>Condition | Irrelevant-Purpose<br>Condition | Row Totals      |
|------------------------------|------------------------------|---------------------------------|-----------------|
| No Justification Requirement | 14/17<br>(82.4)              | 10/17<br>(58.8)                 | 24/34<br>(70.6) |
| Justification Requirement    | 8/17<br>(47.1)               | 12/19<br>(63.1)                 | 20/36<br>(55.6) |
| Column Totals                | 22/34<br>(64.7)              | 22/36<br>(61.1)                 | 44/70<br>(62.9) |

This table reports the proportions (percentages) of participants recommending that the failing project be discontinued in Experiment 2.

The general- and irrelevant-purpose conditions are as described in Table 1. No relevant-purpose condition was run in Experiment 2.

Justification requirements were manipulated by informing half of the participants in the instructions that they would be required to justify their recommendations in a convincing manner and by asking them, after they made their recommendations, to provide reasons for them.

**Table 4**

*Examination of Reasons Provided for Recommendations  
Experiment 2*

**Panel A. ANOVA Model for Total Number of Reasons Provided**

| Source                     | Df | MS    | F    | p     |
|----------------------------|----|-------|------|-------|
| Condition                  | 1  | 0.15  | 0.10 | 0.758 |
| Recommendation             | 1  | 11.40 | 7.55 | 0.010 |
| Condition X Recommendation | 1  | 2.21  | 1.46 | 0.236 |
| Residual                   | 32 | 1.51  |      |       |

**Panel B. ANOVA Model for Number of Reasons Supporting the Project**

| Source                     | Df | MS   | F     | P     |
|----------------------------|----|------|-------|-------|
| Condition                  | 1  | 0.04 | 0.11  | 0.742 |
| Recommendation             | 1  | 9.93 | 24.72 | 0.000 |
| Condition X Recommendation | 1  | 0.04 | 0.11  | 0.742 |
| Residual                   | 32 | 0.40 |       |       |

**Panel C. ANOVA Model for Number of Reasons Opposing the Project**

| Source                     | Df | MS    | F     | P     |
|----------------------------|----|-------|-------|-------|
| Condition                  | 1  | 0.03  | 0.03  | 0.870 |
| Recommendation             | 1  | 42.61 | 39.12 | 0.000 |
| Condition X Recommendation | 1  | 1.63  | 1.49  | 0.230 |
| Residual                   | 32 | 1.09  |       |       |

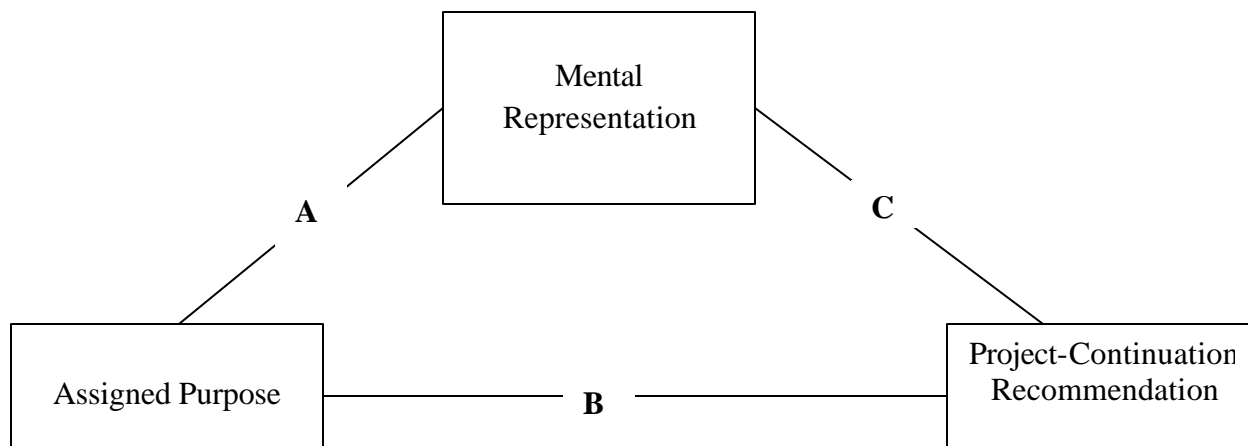
This table reports analyses of the reasons justification-condition participants provided for their project-continuation recommendations in Experiment 2. Analyses include all reasons (Panel A), reasons supporting the project (Panel B), and reasons opposing the project (Panel C).

Condition includes the general-purpose and irrelevant-purpose conditions as described in Table 1. No relevant-purpose condition was run in Experiment 2.

Recommendation reflects whether participants recommended that the project be continued or discontinued.

**Figure 1**

*Model of the Causal Links between Assigned Purpose and Project-Continuation Recommendations*



This figure models our assertion that the influence of assigned purpose on project-continuation recommendations is mediated by accessible knowledge of critical threats to project viability.

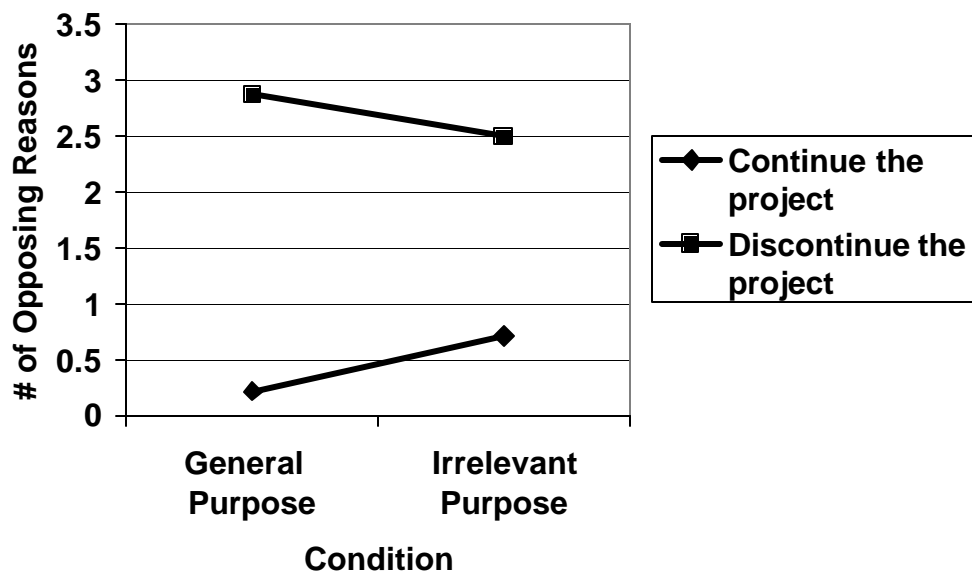
Link A represents the hypothesized relation between assigned purpose and the mental representation (H1a and H1b). Following prior research, we use memory as a measure of participants' mental representations.

Link B represents the hypothesized relation between assigned purpose and the project-continuation recommendation (H2a and H2b).

Link C represents the relation between the mental representation and the project-continuation recommendation.

**Figure 2**

*Number of Reasons Opposing the Project Provided by Experimental Condition and Nature of Recommendations  
Experiment 2*



## Appendix A

### *Memory Test, Experiments 1 and 2<sup>1</sup>*

- |  |          |          |
|--|----------|----------|
| 1. The actual financial data revealed that 2001 project income is expected to be positive.                     | T        | F        |
| 2. Actual unit sales have been higher than the pessimistic forecasts, but lower than the expected forecasts.   | T        | F        |
| 3. Expected financial projections called for positive ROI in all years.  | T        | F        |
| 4. Direct materials production costs have been higher than expected.   | T        | F        |
| 5. Optimistic financial projections called for positive ROI in all years.                                      | T        | F        |
| 6. The actual ROI figures for 1999 and 2000 were lower than the pessimistic projection.                        | T        | F        |
| <b>7. Actual abnormal spoilage has been higher than the expected prediction for all years.</b>                 | <b>T</b> | <b>F</b> |
| <b>8. The product is sold at a very competitive price.</b>   | <b>T</b> | <b>F</b> |
| 9. There were (anticipated) production problems in the beginning of the project, but these have been resolved. | T        | F        |
| 10. “Other costs” have been consistent with predictions.   | T        | F        |

<sup>1</sup> This is the memory test used for Experiment 2. The test for Experiment 1 was identical except for two items. The first question asked about ROI instead of project income. In addition, dates were updated for Experiment 2. The two items making up the knowledge score are in bold.

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<sup>1</sup> Arkes and Blumer (1985) and Chow et al. (1997) demonstrate escalating commitment in product development scenarios.

<sup>2</sup> Individuals also exhibit escalation tendencies when they face job insecurity and resistance from others regarding prior decisions (Fox and Staw 1979).

<sup>3</sup> A potential social-psychological explanation for escalation of commitment in the absence of personal responsibility is that maintaining the status quo (e.g., continuing a failing project) is generally more socially acceptable than changing it (e.g., Samuelson and Zeckhauser 1988; Tetlock and Boettger 1994). Thus, individuals sensitive to social-acceptance issues may be unwilling to discontinue a failing project, regardless of their level of personal responsibility.

<sup>4</sup> The basic tenant of prospect theory is that an individual's value function is concave for gains (i.e., resulting in risk-averse behavior) and convex for losses (i.e., resulting in risk-seeking behavior) (Kahneman and Tversky 1979).

<sup>5</sup> However, Conlon and Garland (1993) manipulated both the level of sunk costs and the degree of project completion and found escalation effects only when the project was substantially complete. Thus, sunk costs may influence project decisions only when they are linked to a perception of progress on a course of action (Staw 1997).

<sup>6</sup> Agency theory has also been invoked to explain escalation behavior when managers face incentives to shirk (e.g., positive reputation effects for project continuation) and possess private information about a project's forecasted economic performance (Kanodia et al. 1989; Harrison and Harrell 1993; Harrell and Harrison 1994).

<sup>7</sup> The purpose of this study is to test a theory about cognitive causes for escalating commitment. Student participants are appropriate for this test, because the theory does not depend on characteristics of the managerial population (see Libby et al. 2001; Peecher and Solomon 2001). This issue is discussed further in the conclusion.

<sup>8</sup> Additional evidence that participants acquired equal amounts of information from the case can be gleaned from analysis of free recalls. A research assistant, blind to hypotheses and experimental condition, parsed recalls and coded them as either correct or incorrect. Reasonable inferences and valid approximations were included in the "correct" category. On average, participants recalled 12.26 items, of which 11.01 were correct. As expected and consistent with the ten-item memory test, neither the total number of items recalled nor the total number of items correctly recalled varied by experimental condition ( $F_{2,79} = 0.20, p = 0.821$  and  $F_{2,79} = 0.43, p = 0.654$ , respectively). If only recalled items specific to the project are counted, there are still no significant differences across experimental conditions ( $F_{2,79} = 1.37, p = 0.261$  for project-related items incorrectly recalled and  $F_{2,79} = 1.66, p = 0.196$  for items correctly recalled).

<sup>9</sup> We use Snyder's (1974) original 25-item self-monitoring scale, with possible scores ranging from 0 to 25. Shorter scales have been developed, but Snyder's original scale is most common in psychological research (Day et al. 2002). We classified participants with scores of 13 (the

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median) and higher as “high” self-monitors and those with scores less than 13 as “low” self-monitors.

<sup>10</sup> We did not expect the control variable, SM, to interact with experimental condition. Consistent with expectations, the interaction is insignificant and inferences are unchanged by its exclusion from the model. We present the simpler model in Table 2.

<sup>11</sup> Categorical ANOVA models for the mediation analysis do not converge due to linear dependencies in responses for some low knowledge cells. Therefore, mediation analysis is presented only for the continuous version of the dependent measure.

<sup>12</sup> This conclusion is tempered by a marginally significant interaction between experimental condition and knowledge score ( $F_{2,75} = 2.81, p = 0.067$ ). Examination of cell means indicates that, although the relation between knowledge scores and RECOMMEND is positive in all experimental conditions, the effect is more pronounced in the relevant-purpose condition than in the other two conditions.

<sup>13</sup> Overall memory (i.e., total knowledge score) is not a potential mediator between experimental condition and recommendations because condition (a) is not met. If overall memory is used as a covariate in the Table 2, Panel B analysis (i.e., in place of knowledge score), it is significant ( $F_{1,75} = 4.69, p = 0.033$ ); however condition retains its significance ( $F_{2,75} = 4.23, p = 0.018$ ), further indicating no mediating relationship. SM retains its significance when the knowledge measure is added to the analysis ( $F_{1,75} = 6.48, p = 0.013$ ).

<sup>14</sup> The comparable p-value for Experiment 1 was 0.039.

<sup>15</sup> The comparable p-value for Experiment 1 was 0.172. Note that the overall proportion of participants recommending discontinuation of the project is higher in Experiment 2 than in Experiment 1. It is not surprising that these rates differ, given that the two experiments employed different populations in different geographical areas and were conducted at different times under different general economic conditions. It is noteworthy that significant escalation of commitment occurs in both samples and that the theoretical relationships hold across the samples.

<sup>16</sup> Inferences are identical when the continuous form of the variable (i.e., RECOMMEND), computed as in Experiment 1, is used as the dependent measure and self-monitoring is controlled for. In particular, the requirement to justify does not influence recommendations of irrelevant purpose participants ( $F_{1,65} = 0.28, p = 0.597$ ), but it decreases the strength with which general purpose participants recommend project discontinuation ( $F_{1,65} = 5.06, p = 0.028$ ). Our classification of high and low self-monitors in Experiment 2 is based on the median score of 11. Consistent with Experiment 1 results, SM is also a significant determinant of strength of recommendations ( $F_{1,65} = 5.01, p = 0.029$ ).

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<sup>17</sup> Only participants who were required to justify their decisions to the Board were asked to provide explanations for their recommendations. Accordingly, we examined explanations provided by justification-condition participants only.

<sup>18</sup> An author, blind to experimental condition and recommendation, parsed explanations into reasons and coded reasons into the three categories. A research assistant, also blind to experimental condition and recommendation, independently coded each item. Initial overall agreement was 87%. Cohen's Kappa, a measure of inter-rater agreement over and above that expected by chance, is .77. Coders met to reconcile differences. Reported results employ reconciled ratings.

<sup>19</sup> Increasing accountability for decision *outcomes* tends to strengthen escalation tendencies, whereas increasing accountability for decision *processes* reduces them (Simonson and Staw 1992).