Escalation of Commitment: The Effects of Magnitude of Loss, Monitoring and the Presence of an Alternative Investment. Can a Project 90% Complete be Stopped?

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Previous studies have shown the continuation of a failing project, also known as escalation of commitment, occurs in many aspects of business and government. This study incorporates several established theories to explain the effects of an alternative investment, magnitude of loss and monitoring on the likelihood of continuing a project. The combination of the presence of an alternative investment, "high" magnitude of loss and "low" monitoring was enough to cause decision makers to stop the project suggesting for the first time that decision makers may be willing to stop a project even though it is 90% complete.

INTRODUCTION

Previous studies have shown the continuation of a failing project occurs in many aspects of business and government, and that the commitment to and continuation of a previous decision can even apply to waiting on a bus, attending a play and mountain climbing. The phenomenon of runaway projects is also referred to as overcommitment or escalation of commitment to a failing course of action (Staw, 1976), the sunk cost effect (Northcraft and Wolf, 1984) and entrapment (Brockner, Rubin, and Lang, 1981). Therefore, the reversal of escalating commitments to failing courses of action, either through project termination or redirection, can be called de-escalation of commitment (Keil and Robey, 1999).

Several theories have been suggested to explain the reasons managers continue failing or doubtful projects. Among those theories are Agency Theory (Jensen and Meckling, 1976), Self-Justification Theory (Festinger, 1957), Prospect Theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981), Approach Avoidance Theory (Rubin and Brockner, 1975), Self-Efficacy Theory (Bandura, 1977a) and National Culture Theory (Hofstede, 1980, 1983,1984).

This study incorporates Agency Theory, Self-Justification Theory and Approach Avoidance Theory to explain the effects of an alternative investment, magnitude of loss and monitoring on the likelihood of continuing a project. The experimental design of the study was a 2 (presence of an alternative investment: yes or no) x 2 (monitoring: low or high) x 3 (magnitude of loss: low, medium or high) between-subjects factorial design. Likelihood of continuing a project was measured in two ways: first, dichotomously

(either "yes" the subjects continued the project, or "no" they did not) and second, on a 0-100 continuous scale. Data were analyzed using binary logistic regression for the dichotomous dependent variable and an analysis of variance for the continuous dependent variable as well as a priori contrasts to make planned comparisons.

RESEARCH QUESTION, THEORY DEVELOPMENT AND HYPOTHESES

Our research question was - *"Are there any variables or combination of variables that would cause a decision-maker to be significantly less likely to continue the project, or even stop it, when the project is estimated to be 90% complete?"*

Self-Justification Theory

Festinger (1957) developed the idea of cognitive dissonance. In his monograph he theorized that an individual's motivations are fundamental in nature. If a person receives feedback different from what he anticipated, then this inconsistency generates a negative intrapersonal state (dissonance) which motivates the individual to seek and implement a strategy to alleviate this aversive state (Elliot & Devine, 1994).

Brehm and Cohen (1962) restated and extended Festinger's cognitive dissonance as Self-Justification Theory. At the core of psychological self-justification is the idea of personal responsibility. Staw (1976) was the first researcher to manipulate personal responsibility in escalation literature. His results suggested those subjects who were not responsible for the original decision to invest were less likely to continue the failing project. For this study we did not manipulate the feeling of responsibility since it was not one of the variables being tested. At the beginning of the experiment were given information regarding a project which was financially viable. This will be discussed in more detail in the methodology section, but any subject who chose to not invest in the described project were given directions to open a different envelope which described a project which they inherited from a previous administrator and they were not included in this study other to be used as a control feature. Thus, all subjects in this study were responsible for the initial decision to invest.

Approach Avoidance Theory

Rubin and Brockner (1975) theorized that escalation is a behavior that results when driving forces that encourage persistence seem to outweigh restraining forces that encourage abandonment (Brockner and Rubin, 1985). According to Approach Avoidance Theory, the cost of persistence (a restraining force) is overshadowed by one or more driving forces in escalation situations: 1) the size of the reward for goal attainment, 2) the cost of withdrawal, or 3) the proximity to the goal.

Conlon and Garland (1993, 1998) suggested that escalation behavior and what was previously characterized as the sunk cost effect may be motivated by what they term the completion effect. Because many studies found a strong correlation between sunk costs and completion, Moon (2001a, 2001b) attempted to de-couple sunk cost and completion. First he had to find that subjects considered *both* sunk costs and a project's completion (which he did find), but mostly with projects that were near completion. For this study we did not manipulate how complete the project was and held it constant at 90% for all treatment conditions as the research question was to test if subjects were willing to stop a project which was 90% complete.

Agency Theory

Jensen & Meckling (1976) developed the idea that a relationship may exist in which an employee (the "agent") may have motivation to *not* act in the best interest of his employer (the "principal). Instead, in that particular situation the employee's motivation comes about because of the inconsistency or incongruency between the employee's best interest when compared to the goals or best interest of the employer.

A major contributor to the Agency Theory is the lack of knowledge the principal may have regarding the agent's actions or the agent's knowledge of the situation. Eisenhardt (1989) defined an agency

relationship as one between individuals in which one party (the principal) employs another party (the agent) to perform on behalf of the principal. In return, the agent receives benefits that are determined by a contract between the parties. Kirby and Davis (1998) directly studied escalation in the context of a principal-agent relationship and found that monitoring the agent reduced the likelihood of escalation occurring. Therefore:

> *H1: Subjects who are being monitored will be less likely to continue the project than subjects who are not being monitored.*

Magnitude of Loss

Keil, Wallace, Turk, Dixon-Randall and Nulden (2000) examined "magnitude of loss" as one variable in their study of software development escalation. They manipulated this variable as "low", "medium" or "high". They defined "low" as "The failure of this project will have little or no effect on the company's position or ability to survive". They defined "medium" as "The failure of this project will have a significant effect on the company's financial position, but not on the company's ability to survive". They defined "high" as "The failure of this project will have a significant effect on the company's financial position and will threaten the company's ability to survive" (p. 150). Their study found that "magnitude of loss" had a positive main effect on a subject's risk perception which in turn affected the likelihood to continue the project. This study will hypothesize that as the magnitude of the loss increases, subjects will be less likely to continue the project and therefore:

> *H2: Subjects in the "high" magnitude of loss will be less likely to continue the project than those subjects in the "low" or "medium" conditions of magnitude of loss*

Presence of an Alternative Investment

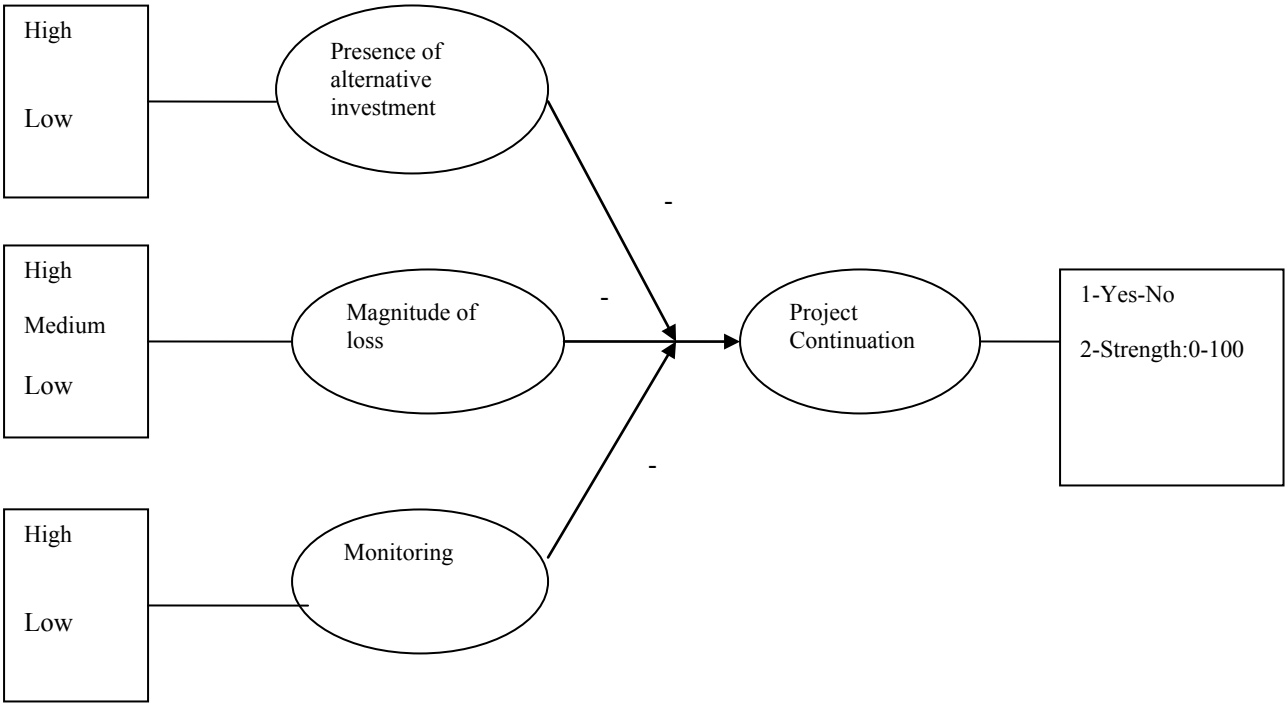
Staw and Ross (1987) found that the presence of alternative investments reduced the likelihood of continuing a project. From a psychological standpoint, if the decision maker feels he has no choice or the only choice is between continuing and stopping, then he is more likely to continue the project. Northcraft and Neale (1986) also suggested the same in their experiment which found that decision makers were less likely to escalate when the opportunity costs of continuing their course of action were made more salient. Keil, Truex and Mixon (1995) manipulated presence of an alternative investment and found that decision makers were less willing to continue a project "regardless of sunk cost or completion effects" (p. 376). Therefore:

> *H3: Subjects who have an alternate investment that appears equally attractive will be less likely to continue the project*

Keil et al (1995) found when the project was 90% complete but the subjects had an alternative investment, the mean score of "likelihood to continue" was 49.0, below the 50.0 threshold though not at a significant difference. Magnitude of loss and monitoring were not part of the model. Previous literature, namely Keil et al (2000) for "magnitude of loss" and Kirby and Davis (1998) for "monitoring", suggests that both of these variables have a significant main effect on reducing the likelihood to continue a project. Therefore, we hypothesize that:

> *H4: The combination of "high" magnitude of loss, "high" monitoring and the presence of an alternative investment will cause subjects to stop projects at a level significantly different from deciding to continue the project by mere chance.*

FIGURE 1
CAUSAL MODEL OF THE STUDY



EXPERIMENT AND METHODOLOGY

Experimental Design

The design of the experiment was a 3 (magnitude of loss: high, medium or low) X 2 (monitoring: high or low) X 2 (presence of an alternative investment: high or low) between-subjects factorial design.

Participants

Students served as participants for the study. Conflicting evidence exists for using students as surrogates for decision-makers in the escalation paradigm. Some studies suggest that the more experience one has, the less likely the subject will be to continue the project (Garland, Sandefur and Rogers, 1990; Waters and Collins, 1984; Kuehn, Khandekar and Scott, 1996; Keil, Mixon, Saarinen and Tuunainen, 1995a; Harrison and Harrell, 1993; Hughes and Gibson, 1991; Ashton and Kramer, 1980) while other studies found experience had no effect on the decision to continue the project (Chang and Ho, 2002, 2004). More recent studies have also used students in their escalation experiments (Denison, 2009; Gunia, Sivanathan and Galinsky, 2009; Jensen, Conlon, Humphrey and Moon, 2011; Ting, 2011) used students in their escalation studies. Because of the conflicting evidence and ease of access to students, we felt it was appropriate to use students, primarily seniors and MBA students. 51% of the subjects were male, 48% female with 1% not responding and 56% were undergraduates, 43% were graduate students and 1% did not respond.

Administration of Experiment and Procedure

Subjects were presented with an unsealed 9x12 inch manila envelope with a unfolded, one-page description of an investment case scenario (adapted from Keil, Truex and Mixon, 1995) and two sealed letter-sized envelopes labeled “envelope #1” and “envelope #2”. The project case scenario described a project that met the company’s minimum required rate of return.

After reading the scenario as stated above, the subjects were asked if they would like to invest in the project being described. If the subject chose to invest in the project, they were instructed to check "yes" at the bottom of the case scenario and directed to open envelope #1. If the subject chose to not invest in the project being described, they were instructed to check "no" at the bottom of the case scenario page and directed to open envelope #2. Those subjects who chose to invest in the project were the subjects of interest in the main study. These subjects who chose to invest in the project were also told that if they did decide to invest in the project, they would be responsible for its outcome. Thus, these subjects should have been in a higher state of feeling responsible for the project's outcome as compared to if they had been merely informed that they told they were responsible for the project. There were 52 (14.8%) subjects who chose to not invest ("opted-out") in the project. Those subjects then opened envelop #2 read similar versions as those who choose to invest, but those subjects had a version describing a project that they inherited rather than chose to invest in at the very beginning. These subjects were used as a control group to test for the responsibility feeling. The feeling of responsibility between the participating subjects (m=86.12, s.d.=16.94) and the subjects who opted-out (m=47.15, s.d.=23.65) was greatly significant, ($F(1,351)=206.18$, $p<.001$). Thus, generally all of the subjects of interest had the feeling of being responsible for the original decision to invest in the project.

Manipulations

Monitoring

At this point we introduced the manipulations for the variables of interest. For those in the low monitoring condition, there was not any additional mention of a board of directors monitoring their decisions and thus were in the "low" condition. The manipulation for the "high" monitoring condition was adapted from Kirby and Davis (1998) and Tosi, Brownlee, Silva and Katz, (2003).

Board of directors - While you make all project investment decisions for the company, due to the significant resource allocations required of the project, your company's board of directors has decided to increase the frequency of your reporting to them from every four months to once a week. In addition, the directors have assigned an internal auditor who will give them an independent assessment of the progress of the project.

Presence of Alternative Investment Manipulation

Then the subjects read the manipulation for presence of alternative investment (mentioned or not mentioned). That manipulation was adapted from Keil, Truex and Mixon, (1995).

Alternative investment - Recently, your market researchers have determined that there is another project that your company could pursue that would have a profit potential equal to that which was originally forecasted for CONFIG (the original project). This other project – called COMPULERT – involves the development of an artificial intelligence system for monitoring, diagnosing and reporting computer hardware problems before they become serious. This development effort would be aimed at producing a software product that would appeal to the major computer companies in the US, all of which are under increasing pressure to improve the level of service provided to their customers. A technical assessment of the project indicates that COMPULERT will require two to three months to develop and will cost the same amount of funding to finish the CONFIG project.

Magnitude of Loss Manipulation

Finally, the subjects read the definitions and manipulations for "magnitude of loss" (adapted from Keil et al, 2000) and were informed:

The percentage of the company's investment capital required to complete CONFIG is considered (high, medium or low) *and therefore the magnitude of loss for the company is considered to be* (high, medium or low) *for these projects.*

Competition

To help induce negative feedback and induce escalation, "competition" was held constant across all conditions with all participants being informed a competitor had just introduced its product which was easier to use and had greater functionality (adapted from Keil et al, 2000). Haunschild, Davis-Blake and Fichman (1994) had a main effect for competition; that is, if subjects had competition for their acquisition target, the more likely they were to continue their quest to acquire.

Data Analysis

Data were analyzed for the first dependent variable (dichotomous) using binary logistic regression. For the second dependent variable (continuous, 0-100 scale), the data were analyzed using a 2 (monitoring: high or low) x 2 (presence of alternative investment: high or low) x 3 (magnitude of loss: low, medium or high) between-subjects analysis of variance.

Control and Manipulations Checks

Demographic Checks

The demographic information of the participants we gathered were gender, class (year in school), major, grade point average, experience and, since the participants came from multiple universities, school. Where possible, we tested the cells so that proportions of demographics, i.e., male and female, were relatively evenly distributed across cells. For the cells tested, proportions were relatively evenly distributed across cells. None of the demographics had a significant effect on the dependent variables; therefore, we were able to analyze the effects of the variables of interest on the dependent variables.

Monitoring

While the test for the manipulation check for monitoring was significant (F=29.703, $p<.001$), the mean of the "low" condition (m=7.07, s.d = 2.55, range = 2-10) was not what we had anticipated. These results could help explain the reason the monitoring variable ultimately did not have a significant effect on the two dependent variables.

Presence of an Alternative Investment

The manipulation check for presence of an alternative investment was successful in that there was a main effect, F=85.641, $p<.001$, such that people with an alternate investment option were more likely to agree with the statement that they had an alternate option (m=7.93, s.d.=2.21) than those who did not have an alternate investment option (m=2.50, s.d.=2.96). No other main effects and no interactions were significant, thereby suggesting that our manipulation of the alternative investment variable was successful.

Magnitude of Loss

Given the definitions of magnitude of loss, we needed two questions to test if our manipulation of magnitude of loss had been perceived correctly. The first half of the definition referred to the company's financial position. After testing for a robust difference (F=86.473, $p<.001$, no other significant main effects or interactions), we conducted the univariate tests for the difference in means - "low" to "medium", "low" to "high" and then "medium" to "high".

Question #1 – Financial position, Univariate Tests

We compared the mean value of the "low" condition of magnitude of loss (m=4.45, s.d.=3.21) to the values of the "medium" (m=7.35, s.d.=1.95) and "high" (m=8.94, s.d.=1.84) conditions respectively. The results of the univariate test between the "low" and "medium" magnitude of loss were significant, F (1,194) = 58.72, $p<.001$, which suggested subjects properly perceived a significant effect on the company's financial position if the project were to fail. We found similar significant results when comparing the "low" and "high" conditions, F (1,194) = 145.93, $p<.001$. While the difference between means for "medium" (m=7.35, s.d.=1.95) and "high" (m=8.94, s.d.=1.84) was significant

(F(1,195)=34.64, *p*<.001), we were not concerned because each of their values were relatively high which indicated subjects properly perceived a large difference how such a loss would affect a company's financial position when compared to a "low" magnitude of loss.

Question #2 – Ability to Survive

Somewhat similar to "financial position of a company", the second half of the definition of magnitude of loss referred to the company's ability to survive. Our concern with "ability to survive" was that subjects would perceive a significant difference between "high" magnitude of loss and the other two conditions. After testing for a robust difference (F=78.004, *p*<.001, no other significant main effects or interactions), we conducted the univariate tests for the difference in means - "low" to "medium", "low" to "high" and then "medium" to "high".

When testing the means of "low" (m=3.36, s.d.=3.42) and "medium" (m=4.15, s.d.=2.86), they were not significantly different, F (1,194) = 2.307, *p*=.131. Since the means for both conditions were less than five and the difference was not significant, we were satisfied with this outcome. The means of "low" and "high" (m=8.28, s.d.=2.40) magnitude of loss were significantly different, F (1,197) = 131.859, *p*<.001, as were the means of "medium" and "high", F (1,195) = 120.626, *p*<.001. These results suggest that our manipulation for magnitude of loss was successful in that subjects properly perceived there would be a greater detrimental effect on the company's ability to survive if the project failed.

RESULTS

The study was concerned with whether participants would continue a project even though it was 90% complete. We measured whether they would continue in two ways – 1) by asking a simple yes/no question and 2) the likelihood they would continue the project on a 0-100 continuous scale. Below are the values for each of the twelve conditions (*n*=25) for the continuous dependent variable:

TABLE 1
CELL MEANS FOR CONTINUOUS DEPENDENT VARIABLE

Monitoring	Presence of Alternative Investment	Magnitude of Loss	Mean	Std Deviation
Low	Low	Low	69.40	26.47
Low	Low	Medium	57.92	29.32
Low	Low	High	53.76	30.99
Low	High	Low	59.00	28.17
Low	High	Medium	45.96	33.69
Low	High	High	37.60	28.44
High	Low	Low	72.52	22.32
High	Low	Medium	63.52	23.01
High	Low	High	54.40	29.20
High	High	Low	43.40	32.71
High	High	Medium	48.20	31.32
High	High	High	47.80	29.44

Dependent variable, Likelihood to continue the project, continuous, 0-100

Below is the ANOVA table for the continuous dependent variable, likelihood to continue measured on a 0-100 scale:

TABLE 2
ANOVA RESULTS FOR CONTINUOUS DEPENDENT VARIABLE

Between-Subjects Effects	Type III Sum of Squares	df	Mean Square	F	Sig.
Source:					
Corrected Model	30,672.597	11	2788.418	3.328	.000
Intercept	889,658.563	1	889,658.563	1061.672	.000
Magnitude	8098.287	2	4049.143	4.832	.009
Monitoring	80.083	1	80.083	.096	.757
Alternative Investment	16,710.403	1	16,710.403	19.941	.000
Magnitude*Monitoring	2011.927	2	1005.963	1.200	.303
Magnitude*Alternative Investment	939.887	1	939.887	.561	.571
Monitoring*Alternative Investment	326.563	1	326.563	.390	.533
Magnitude*Monitoring*AltInvestmt	2505.447	2	1252.723	1.485	.226
Error	241,337.840	288	837.979		
Corrected Total	272,010.437	299			

Dependent variable, Likelihood to continue the project, 0-100

Dependent Variable – Dichotomous

Listed below is a chart which shows the percent of participants who choose to continue the project for each of the twelve conditions (*n*=25) for the dichotomous dependent variable:

TABLE 3
CELL MEANS AS A PERCENT FOR WHO CHOSE TO CONTINUE THE PROJECT, DICHOTOMOUS DEPENDENT VARIABLE

Monitoring	Presence of Alternative Investment	Magnitude of Loss	Mean
Low	Low	Low	80.00
Low	Low	Medium	68.00
Low	Low	High	56.00
Low	High	Low	52.00
Low	High	Medium	44.00
Low	High	High	32.00
High	Low	Low	92.00
High	Low	Medium	72.00
High	Low	High	56.00
High	High	Low	52.00
High	High	Medium	52.00
High	High	High	40.00

Dependent variable, Likelihood to continue the project, dichotomous, 0-1

Below are the test results for the dichotomous dependent variable using a binary logistic regression:

TABLE 4
LOGISTIC REGRESSION TABLE FOR DICHOTOMOUS DEPENDENT VARIABLE

Source:					
Corrected Model	8.120	11	.738	3.273	.000
Intercept	100.920	1	100.920	447.429	.000
Magnitude	2.660	2	1.330	5.897	.003
Monitoring	.213	1	.213	.946	.332
Alternative Investment	4.813	1	4.813	21.340	.000
Magnitude*Monitoring	.007	2	.003	.015	.985
Magnitude*Alternative Investment	.287	2	.143	.635	.530
Monitoring*Alternative Investment	.000	1	.000	.000	1.000
Magnitude*Monitoring*AltInvestmt	.140	2	.070	.310	.733
Error	64.960	288	.226		
Corrected Total	73.080	299			

Dependent variable, Likelihood to continue the project, dichotomous, 0-1

Overall, the model was significant for the continuous dependent variable F=3.328 (11,288) and the dichotomous dependent variable correctly predicted 63.3% of the outcomes, the 2 log-likelihood value was 375.395 and the Chi-Square value was 32.78, (df=4), $p<.001$. Since none of the two-way interactions nor the three-way interaction were significant for either dependent variable, we could analyze the results for the main effects.

Hypothesis Testing

H1. Subjects who are being monitored will be less likely to continue the project than subjects who are not being monitored.

Hypothesis 1 was not supported for either dependent variable. For the continuous variable (Table 2), monitoring did not have a significant effect on the likelihood of a subject to continue a project that was 90% complete, F=.096 (1,288), p=.757. Those in the "high" monitoring condition (m=54.97, s.d.=29.59) were just as likely to continue the project as those in the "low" condition (m=53.94, s.d.=30.81). For the dichotomous dependent variable (Table 4), monitoring did not have a significant effect, p=.324. Fifty-five percent of the subjects in the "low" condition continued the project while nearly sixty-one percent of the subjects in the "high" condition chose to continue the project.

H2. Subjects in the "high" magnitude of loss will be less likely to continue the project than those subjects in the "low" or "medium" conditions of magnitude of loss.

This hypothesis was supported for both dependent variables with the continuous dependent variable being F=4.832 (2,288), $p<.01$. For the dichotomous dependent variable, the Wald statistic was 11.443, $p<.003$. These results suggest that participants consider the effects to the company if the project were to fail. Subjects were less likely to continue the project as the effects of loss from a failed project would become more severe to income and financial position.

H3. Subjects who have an alternate investment that appears as equally attractive will be less likely to continue the project.

This hypothesis was strongly supported for both dependent variables. For the continuous dependent variable, the F (1,288) =19.501, $p<.001$ was highly significant thereby suggesting that the presence of an alternative investment reduces the likelihood the decision maker will continue the project.

Likewise for magnitude of loss, the dichotomous dependent variable was also highly significant, Wald=19.938, $p<.001$. If the participants had an alternative investment available, they were significantly less likely to continue the project.

> *H4. The combination of "high" magnitude of loss, "high" monitoring and the presence of an alternative investment will cause subjects to stop projects at a level significantly different from deciding to continue the project by mere chance.*

This hypothesis was not supported as none of the two-way interactions nor the three-way interaction were significant. The main cell of interest was the combination of conditions of "high" magnitude of loss, "high" monitoring and the presence of an alternative investment. Basically, our hypothesis was that this combination should have caused subjects to greatly reduce their tendency to continue the original project. Building on Keil, Truex and Mixon (1995), we predicted the combination should have caused decision makers to reduce their likelihood to continue the project significantly less than fifty. Looking at the cell mean for the two dependent variables, this hypothesis was not supported. For the continuous dependent variable of likelihood to continue the project, that cell's mean was 47.80 (s.d. 29.44, n=25). For the dichotomous dependent variable, 52% of the subjects elected to continue the original project. Obviously, we cannot state that the results suggest that subjects would choose to stop a project that was 90% complete. However, the results suggest that there is one cell whose combination of variable conditions may cause subjects to stop a project that is 90% complete – "high" magnitude of loss, "low" monitoring and the presence of an alternative investment.

For the continuous dependent variable, this combination of variables had a mean value of 37.60 (s.d.=28.44). To test whether this value is significantly below 50, we use the mean and standard deviation to calculate a Z score where Z =

$$\frac{(50 - 37.60)}{(\text{Variance}/n)\text{^}.5}$$

Here, Z= 2.19 (d.f.=24), $p< .03$ which suggests that those subjects had a mean significantly less than fifty. Therefore, we were able to conclude those subjects were willing to stop a project if they have some (low) monitoring, an alternative investment and the failure of the project is likely to put into question the survivability of the company. This result differs from Keil, Tuex and Mixon (1995) whose value for this cell was 49.0. It is important to note in their study that monitoring was not included in the model. Most importantly, this is the first evidence that suggests there might be a combination of variables that could cause decision makers to stop a project even though it was 90% complete.

For the dichotomous dependent variable, the same combination of variables caused only 32% of the subjects to elect to continue the project. To test if that dependent variable was significantly less than fifty percent, we calculated a corresponding chi-square Z value

$$\frac{(.32-.50)}{((.68*.32)/25)\text{^}.5} = 1.929$$

The critical value for this test is 1.96, so we cannot quite say that this result is significant with an alpha of .05. However, the p=.072 is marginally significant. Again, this evidence suggests that those subjects were marginally less likely to continue the project than to continue it. Put in a different way, those subjects were marginally more likely to stop the project even though it was 90% complete than they were to continue it. Therefore, those subjects were marginally willing to stop a project if they had some monitoring, an alternative investment and the failure of the project was likely to put into question the

survivability of the company. Again, this is important as in the real world, decision makers ultimately have to make a "yes or no" decision.

DISCUSSION AND CONCLUSION

As predicted, main effects were found for the presence of an alternative investment and magnitude of loss. However, no significant effect was found for monitoring. It was also hypothesized that the combination of the presence of an alternative investment, "high" monitoring and "high" magnitude of loss would be enough of a psychological deterrent to cause decision makers to stop the project, even though it was 90% complete. However, this prediction was not validated. Interestingly, though, the combination of the presence of an alternative investment, "high" magnitude of loss and "*low*" monitoring was enough to cause decision makers to stop the project at a level significantly less than by chance for the continuous dependent variable, and marginally significant less than by chance for the dichotomous dependent variable. Most importantly, these findings suggest for the first time that decision makers are willing to stop a project even though it is 90% complete.

The most interesting finding of this study was that the combination of the presence of an alternative investment, "high" magnitude of loss and "low" monitoring was enough to cause decision makers to stop the project at a level significantly less than by chance for the continuous dependent variable, and marginally less significant than by chance for the dichotomous dependent variable. So we found a possible answer to our research question that there does seem to be a combination of variables which would cause decision-makers to stop a project which is 90% complete. However we are left with, "Why would *less* monitoring reduce the likelihood for continuing a failing project when almost all previous literature suggests greater monitoring of the agent decreases escalation?"

Fox and Staw (1979) stated, "When faced with an external threat or evaluation, individuals may be motivated to prove to others that they were not wrong in an earlier decision and the force for such external justification could well be stronger than the protection of self-esteem" (p. 453). Tetlock and Boettger (1994) suggested that a main reason for what they called the "status quo effect" is that it generally is perceived acceptable by evaluators. Decision-makers who do not deviate from the original decision are perceived as more decisive and principled than those who change their minds, and accountable individuals are also less likely to be blamed for not changing (status quo) than for changing. Hunton, Mauldin and Wheeler (2009) found that if decision-makers were continuously monitored they would increase the need to justify decisions which would in turn lead to a resistance to changing a previous decision, i.e. allowing the project to continue. Berg, Dickhaut and Kanodia (2009) had similar results for single-person situations in that external justification (monitoring) played a more powerful role than internal justification though we need to include their statement that information asymmetry was crucial. Therefore, less monitoring would not lead the decision-maker to have the need to self-justify and thus would be less likely to continue a failing project.

Haunschild, Davis-Blake and Fichman (1994) found that if there was competition in a merger situation, the acquiring firm tended to overpay for various reasons such as decision visibility or public decision context which they defined as "having one's peers know about the decisions one makes" (p. 533). If one equates increased number of meetings with the board of directors as having higher public decision context, then this would lead to greater escalation. Conversely, not having to meet with the board of directors would constitute lower monitoring and lower decision context and therefore reduce escalation. The authors further stated, "Being required to explain or justify one's decision to an external group may actually increase commitment to a failing course of action" (p. 538).

Moon (2001b) found that individuals with high levels of regard of duty were less likely to escalate. Individuals who were high achievement strivers were four times more likely to continue a failing project than low achievement strivers. While a subject's regard to duty and achievement striving were not variables of interest in this study and therefore not measured, they could offer some explanation to the results of less monitoring led to a lower escalation. Cheng, Schulz, Luckett and Booth (2003) had results which suggested that when individuals set their own hurdle rates (minimum rate of return on projects),

such individuals were less likely to continue a project that did not meet the minimum rate of return than when given hurdle rates by the organization. Moser, Wolff and Kraft (2013) had similar results to Cheng et al. as they found predecisional accountability had a de-escalating effect. Again, as we did not measure predecisional accountability, we cannot directly suggest if that is the reason some subjects chose to stop.

Most escalation research has suggested decision-makers would ultimately act in their own best interest rather than in the best interest of the company or principal which suggests the agent who is not monitored would be more likely to escalate than an agent who is monitored. It could be that our unanticipated results were simply random and therefore we caution the reader to draw any definite conclusions. However, given the studies mentioned in the preceding three paragraphs which offered some theoretical support for our findings, it is possible that our results were not just random, further research is needed to better understand this outcome. However, our results suggest for the first time that decision makers might be willing to stop a project even though it is 90% complete.

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