The Effect of Previous Failure and Instruction on Experimenting versus Consistent Decision Making

by

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The Effect of Previous Failure and Instruction on Experimenting versus Consistent Decision Making

Campbell (1969) points out the potential utility of an experimenting as opposed to a consistent approach to managerial decision making. That is, rather than being committed to one particular policy or decision, a manager should be open to feedback on his or her performance and be able to consider other, potentially better, policies. This openness to feedback allows a manager to consider other policy options and thus allows him or her to have a more experimenting rather than consistent approach to managerial decision making as defined by Campbell (1969). Recent research has examined the role of various variables that are considered to have an influence on a manager's preference for either an experimenting or consistent approach to decision making. Staw and his associates (e.g., Fox & Staw, 1979; Staw, 1976; Staw, 1981; Staw & Fox, 1977; Staw & Ross, 1978; Staw & Ross, 1980; Staw, 1986) have been especially noteworthy in this regard (also see Janis & Mann, 1977, for a general review of this decision-making behavior).

Staw has examined the role of self-justification

in a manager's escalation of commitment to a failing policy (i.e. being consistent when it is not beneficial to do so). For example, Staw (1976) found that subjects were more committed to a failing rather than a successful policy and that this commitment was greatest when they were personally responsible for choosing that particular policy (in contrast to having the policy chosen beforehand by someone else and consequently not being responsible for it). Being committed to a failing policy, as Staw indicates, is often not the appropriate action for a manager to take. Although the manager may not realize why he or she is behaving in a certain manner (i.e. experimenting or consistent), it seems clear from Staw's research that there are times when a person is emotionally committed to a specific course of action. As noted by Donaldson and Lorsch (1983), "most of these executives are strongly attached, almost religiously devoted, to their beliefs. Moreover, these emotional convictions shape in important ways the pattern of decisions that are labeled corporate strategy" (p.111).

Real-world examples of this escalation of commitment phenomenon are numerous, and demonstrate it potentially serious consequences. For instance, one

commonly cited example is President Johnson's decision making during the Vietnam War. Janis and Mann (1977) note, "we cited as an example of the binding quality of a commitment President Johnson's increased reluctance to reverse his war policy and withdraw U.S. troops from East Asia once he had publicly announced his determination to prevent a Communist victory in Vietnam" (p. 280). Even after receiving negative feedback about his policy decision, Johnson escalated his commitment and resources to his original decision. Though the historical and political anecdotes relating this cognitive process to actual behavior are interesting and should not be overlooked, the major concern of this paper is on the escalation of commitment among managers in a business context. Thus an attempt will be made to determine some of the variables that influence a manager's escalation of commitment to a failing policy (and consequently the lack of experimentation with potentially more effective policies).

Research has discovered relevant variables, in addition to self-justification, that influence a manager's experimenting or consistent approach to decision making. For example, Staw and Fox (1977)

looked at the influence of time and the efficacy of resources (high versus low) on the escalation of commitment phenomenon. In their study, negative results were presented to subjects over three simulated time periods (1974, 1977, and 1980), in an attempt to examine the role of time on both high and low responsibility subjects (i.e. subjects who thought they were responsible for all three of the allocation decisions vs. subjects who thought the initial allocation decision was not under their control, even though the final two decisions were). They found that the commitment process, to some extent, fluctuated over time. Subjects in a high-responsibility condition were most committed to a certain policy immediately after they were given negative feedback. This commitment dropped significantly, however, from Time 1 to Time 2 (i.e. from a 1974 allocation decision to a 1977 allocation decision). In addition, they found that high-responsibility subjects tended to have greater commitment at Time 3 (1980) than at Time 2 (1977), but not as much as they had at Time 1 (1974). The decisions made by low-responsibility subjects, on the other hand, changed little over the three time periods.

The Staw and Fox (1977) study also showed an immediate effect for the efficacy of resources on the commitment process. That is, subjects were told that either there was a high or low likelihood that a decision to allocate more funding would help the financial condition of the company (high vs. low efficacy). Results for the efficacy manipulation over time were quite similar to the results reported above for the high-responsibility condition. That is, subjects in the high-efficacy condition had somewhat unstable data over time; they committed the largest amount of resources at Time 1 (1974), the least amount at Time 2 (1977), and a moderate amount at Time 3 (1980). The data for the low efficacy condition, in contrast, were relatively stable over time. In interpreting these results Staw and Fox (1977) note, "it is possible that subjects perceived that the decreased investment of R&D from their Time 2 decisions had contributed to the continuing decline in financial results, and that this downtrend could still be arrested by increased investment at Time 3. In any event, escalation did not diminish over time as one might expect when individuals are given negative feedback or 'punishment' over repeated trials" (p.

447).

Fox and Staw (1979) looked at the role that policy resistance and job insecurity (variables thought to heighten political vulnerability) have on a subject's commitment to a previous course of action. These researchers attempted to create a situation in which subjects would lose (politically) if a chosen course of action failed. They hypothesized that if a subject's policy decision failed under these conditions (of political vulnerability), it would almost force them to remain committed to it, even in the face of failure ("the trapped administrator"). Their results showed that as job insecurity and policy resistance increased, so did commitment. In contrast, subjects who faced a condition of low job insecurity and low resistance invested the lowest amount of resources to a prior course of action (i.e. low commitment). Fox and Staw (1979) use these results to suggest that the "trapped administrator" is the one who is most likely to become highly committed to a policy decision and also become inflexible to any possible changes.

Another potential influence on commitment has been described by Staw and Ross (1980). These researchers found that a stereotype exists for effective managers

as being consistent, and not experimenting, in the face of failure. This stereotype would also have a definite effect on a manager's willingness to experiment. Recently, however, this stereotype has been questioned by Knight (1984) and Knight and Saal (1986).

Knight (1984) and Knight and Saal (1986) suggest that there is not a stereotype against experimentation, but rather that our evaluation of a manager is based upon evidence of his or her competence, and that policy consistency can have implications for perceptions of competence (see also Medcof & Evans, 1986, for data that replicates Knight's, 1984, results with business-experienced subjects). That is, it is possible to confound success with strategy (consistent vs. experimenting) in certain experimental situations, such that a successful, consistent manager is viewed more positively than a successful, experimenting manager who initially failed on a task. The experimenting, successful manager in the above example would, by definition, have had to initially made the wrong decision on the task, whereas the consistent, successful manager would have had to initially made the correct decision on the task. According to Knight (1984), however, the relevant variable is not strategy

but rather competence. He notes, "there is not a general bias against experimenting managers, and, in fact, if the experimenting is preceded by evidence of task succes or competence, it may enhance performance ratings, and thus increase the attractiveness of Campbell's (1969) experimenting approach to management" (Knight, 1984, p. 321). (See Staw, 1981, and Bass, 1983, for reviews of the literature on the escalation of commitment.)

Additional research has looked at the role of personality variables in the commitment process. For example, Weiss and Knight (1980) found that there was a relationship between the self-esteem of a subject and his information search and problem-solving efficiency on a task. They found that low self-esteem subjects were more likely to search for information and that, in situations where information search was beneficial to problem solving, they performed better than high self-esteem subjects. Knight and Nadel (1986) looked at the role that self-esteem plays in a subject's decision-making behavior during a management simulation task. They found a relationship between self-esteem and managerial flexibility, with low self-esteem subjects being more willing to experiment than high

self-esteem subjects. Further research (Knight & Kuziej, 1986) also found support for this finding.

The above research dealing with self-esteem is interesting because it reveals that the common belief that a manager needs high self-esteem to be effective (e.g. Dipboye, 1977; Korman, 1976) is not always true. That is, the high self-esteem manager may, at times, be less willing to accept feedback about a failing policy decision and thus be unwilling to change or experiment with potentially better policy decisions.

The question becomes, then, in what situation is high self-esteem beneficial and in what situation is low self-esteem beneficial? A contingency approach is required to answer this question. That is, managerial effectiveness can be thought of as being contingent on the right match of certain personal and organizational elements (Mitchell, 1982). Thus, depending on the situation, high or low self-esteem in a manager may lead to the best outcome (i.e. an experimenting or a consistent approach). For example, if a manager was faced with a situation in which he or she was failing and different policy options were available, experimentation might be the best approach. However, if a manager was in a situation in which one policy

option was clearly the best choice, but temporary conditions developed so that this best policy option would not immediately lead to the optimal outcome, it would probably be wise to stay with this preferred option/decision, because in the long run it would lead to the optimal outcome for the organization.

Self-Esteem and Consistency

Given that in some situations an experimenting approach to management is the most appropriate action to take, what can be done about the high self-esteem manager who is resistant to a change in his or her decisions? It seems that if there were some way to instill the value of an experimenting approach in certain situations, better performance would result. One variable that has yet to be examined is the effect that information about the utility of an experimenting approach has on a high self-esteem subject. That is, if one could inform the subject (manager) about the potential benefits of experimentation, would that have any effects on his or her subsequent behavior in a management decision-making context? If it does have a significant effect, this instruction could have many practical benefits in organizational settings (e.g. reduced costs and increased profits if one stops

wasting time and money on a failing policy and is willing to experiment on potentially better policy options). Thus, a method of instruction was utilized in the present study in an attempt to make subjects realize the potential impact and utility of an experimenting approach to management.

It should be remembered that a contingency approach to management is probably most preferable. Although in some situations consistency is the best policy, instructing managers to be consistent may not be necessary. Research by Weiss (1978), for example, showed that managers have relatively high self-esteem, and since high self-esteem has been shown to be related to consistent decision making (Knignt & Nadel, 1986), it could be hypothesized that managers, in general, are consistent in their decision making. In addition, as noted previously, the results reported by Staw and Ross (1980) suggest that a stereotype exists in which effective managers are thought to be consistent, not experimenting, in their decision making. These results taken together would suggest that, in general, managers are consistent rather than experimenting in their decision making.

Low self-esteem managers, on the other hand, may

benefit from the opposite type of training--that is, training about the potential benefits of being consistent. Although this type of training program may be important in certain contexts, it was not examined in the present study. The present study does not advocate the "training away" of this consistent behavior in managers, but instead is a first attempt at making managers more aware that, depending upon the situation they are in, either a consistent or an experimenting approach to decision making may be the most prefered action to take.

Reactance Theory

In addition, this study examined reactance theory and its relationship to experimentation. Staw and Ross (1978) found that reactance theory predicted most accurately the results of a study on the escalation of commitment. Reactance theory, as formulated by Brehm (1966) and extended by Wortman and Brehm (1975), proposes that if a subject fails or feels that he or she did not perform a task adequately, then he or she will attend more to the situation (e.g. performance feedback or attention to causal information related to success) in an attempt to better his or her chances of succeeding rather than failing in the future. Thus,

according to reactance theory, the subject is acting rationally in a prospective rather than in a retrospective sense (i.e. self-justification and its consequent effects on the escalation of commitment to a failing policy would be retrospective rationality).

Staw and Ross (1978) found that a subject would commit the smallest amount of resources when he or she suffered a previous failure and this failure was due to endogenous rather than exogenous (or chance) causes (i.e. the failure resulted from their own behavior rather than being caused by random, chance factors). Failure due to chance factors did not cause the subjects to deescalate their commitment. After all, if a subject feels that he or she made the correct decision and for chance reasons this decision failed, he or she would probably not be worried about commiting him or herself to this same policy in the future. However, endogenous factors point to the subject's own faulty decision making and thus do not allow him or her to ignore the past failures due to his or her decision making. (It is interesting to note that these findings are inconsistent with the Staw, 1976, study discussed previously. Staw and Ross, 1978, explain these inconsistencies by noting that "resource allocation

decisions are complex social situations" and, as a result, might depend on a number of social/organizational variables and the individual differences of the participants.)

The results from the Staw and Ross study reported above support reactance theory in that they suggest that the subject is concerned about his or her previous failure and as a result is more sensitive to the various cues of the environment (e.g. performance feedback and relevant information about the cases). This increased sensitivity will thus make it more likely that the subject will make the most optimal policy decision available to him or her in this task (e.g. a decrease rather than an increase in resource allocation or an experimenting approach to policy decision-making). In regard to reactance theory Staw and Ross (1978) note, "the value of the present findings is that they show psychological reactance to have the best predictive utility (and perhaps the greatest net effect) in a simple decision-making situation" (p. 160).

It seems then that reactance theory may be a rival hypothesis for this commitment/experimenting effect. That is, when a person has previously failed on a task

and this failure is a result of his or her behavior, he or she may, in an attempt to become more attentive to the present situation, become less committed to a failing policy. This prediction, it should be noted, is counter to the self-justification prediction. Self-justification theory would predict more commitment by a subject even after he or she has failed on a task. In other words, reactance theory will become "active" only after sustained failure, but self-justification will become active initally and will remain active throughout the duration of a specific task or related tasks.

The prediction made in this study was that escalation of commitment to a failing policy (or consistently staying with a failing policy) would be found throughout the duration of an initial task (i.e. either a self-justification or a self-esteem explanation); however, after the subject had failed on this first task, he or she would become more attentive to a second task and as a result not escalate his or her commitment to a failing policy (i.e. a reactance theory explanation).

Thus, this study looked at the separate and combined effects of instruction and previous failure on

a subject's decision making. The prediction was that both instruction and the previous failure on a task would increase the subject's experimenting behavior. However, the combined effects of previous failure and instruction would be greater than their separate effects. The following diagram (Figure 1 below) illustrates this prediction (the dependent measure, number of changes, is an index of the amount of experimentation, the more changes made the more experimenting the subject's behavior).

Self-Esteem and Reactance Theory Explanations

Self-esteem was examined in the present study for two reasons. First, an attempt was made to replicate previous findings on the role of self-esteem in managerial flexibility (e.g. Knight and Nadel, 1986; Knight and Kuziej, 1986). Second, the relationship between previous failure and self-esteem was examined. That is, Wells and Marwell (1976), observe that self-esteem can be influenced or manipulated by previous failure (referred to as "malleable self-esteem theory" throughout this paper). Thus the relationship between failure and self-esteem needs to be closely examined in this area of research.

A relationship between previous failure and

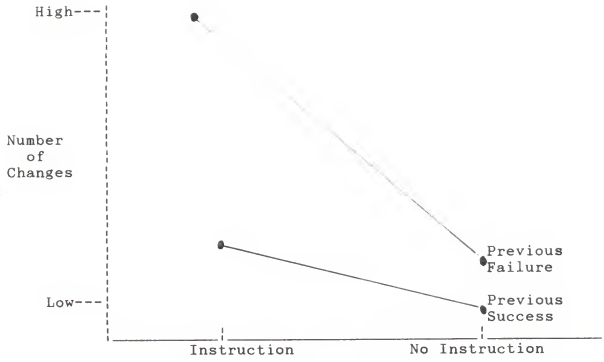


Figure 1

Predicted Effects of Previous Failure and Instruction on the Number of Policy Changes made by a Subject

lowered self-esteem would limit the potential importance of reactance theory in explaining the extent of subjects' experimentation. That is, experimentation would not be the result of reactance theory, but rather could be explained by lowered self-esteem in the subject. The findings from the Staw and Fox (1977) and the Staw and Ross (1978) studies, for example, could be explained by either a lowered self-esteem effect or a reactance theory effect. That is, subjects may have deescalated their commitment to a policy decision after receiving negative feedback because they either had a decrease in self-esteem and thus became more experimenting, or because they became more attentive to their situation and thus became more experimenting and less committed to a policy decision in an effort to perform more effectively (reactance theory). The present study was an attempt to provide the first test between these two competing theories.

Method

Subjects

A total of 146 undergraduate psychology students (79 females and 67 males) participated in the present study in partial fulfillment of a course requirement.

Procedure Overview

Subjects were randomly assigned to one of four different conditions in which they were asked to play the role of a manager in a computer simulation task (the experimental stimuli were computer presented). Simulations have been used in business contexts (e.g. assessment centers) so their use in this study seemed justified (Finkle, 1976). Each subject was asked to complete a self-esteem measure (Rosenberg, 1965) before he or she began the actual simulation. After receiving background information on the task itself, the subject began the first simulation task. The computer presented the subject with a management scenario (Knight & Nadel, 1986) which spanned a total of 24 weeks (see Appendix A). The subject was asked to choose a specific course of action from three options every two weeks. After a policy option was selected the subject was given feedback on the effectiveness of his or her decision. Thus, twelve policy decisions

were made by each subject during the first task. After the first task was completed, the subject was given a second task that was similar to the first (i.e. the procedure was identical, but the scenario was different). Again, the second simulation (see Appendix B) spanned a 24-week period and the subject had the option of maintaining or changing his or her policy decisions every two weeks. After the subjects finished the second simulation they completed a questionnaire (see Appendix C) and were then fully debriefed.

Task The four conditions of this experiment are diagrammed below:

	Task 1	Task 2
Condition 1.	success ¦	instruction -> failure
Condition 2.	success ¦	no instruction -> failure
Condition 3.	failure ¦	instruction -> failure
Condition 4.	failure ¦	no instruction -> failure

Subjects in the first condition experienced success (see Appendix A) at the first task, received instruction (see Appendix D) before the second task, and experienced failure in the second task. Subjects in the second condition also experienced success at the first task, but did not receive instruction (see Appendix E) before the second task, at which they

failed. The final two conditions are identical to the first two conditions with the exception that subjects in these two groups failed on the first task.

Task 1. The first task was called the "Jet Engine Problem." The subject was told that he or she was a manager of a division in a large aircraft corporation. In the past year, this division, which manufactures jet engines, has had an increase in defective engines (from zero percent to two percent). The subject was instructed to lower the defect rate to zero percent within a simulated 24-week period. Every two weeks within this 24-week period, the subjects had to decide whether to institute or continue one of the following policies: (a) hire new inspectors, (b) redesign engines, or (c) use stronger metals.

It was next explained that the subject had $10,000 to work with in the simulation. This amount would either increase or decrease during the simulation, depending on what the subject did and how "successful" they were. For example, they lost $1000 whenever they implemented a new policy. It cost them $100 for each week that the defect rate was above two percent, and they earned $100 each week that the defect rate was below two percent. Finally, it cost the subject $50

each time they checked on the amount of money they had left in their original $10,000 operating budget (referred to as an account balance request; see Appendix A for more details.)

Task 2. The second simulation had the same rules and procedures as the first simulation. The subjects were told that they were transferred to a sales and public relations department in the company on the basis of their performance in Task 1. The task was called the "Ticket Bureau Problem." The subject's division was instructed to increase the sales of a U.S. ticket bureau. Again, three policy options existed: (a) lower the cost of tickets, (b) begin an advertising campaign, or (c) implement a frequent flyer program. (See Appendix B for more details.)

Instruction/No Instruction Manipulation To guard against demand characteristics (Orne, 1962) the instructions about the utility of an experimenting approach had to be presented implicitly. Therefore, it was explained to each subject at the beginning of Task 1 that this was a learning study and each subject was asked to keep track of his or her performance by completing the data sheet shown in either Appendix F or G (depending on the instruction/no instruction

condition to which he or she was assigned). The subject was told that his or her completed data sheet would be shown to the next subject (see Appendix H for the instructions given to the subjects).

The instructions were provided by presenting the subject with a prepared "data sheet" (see Appendices D and E) that outlined the decision-making ability of a "previous subject." Of course, this "previous subject" did not exist; however the subjects in the experiment thought that they were examining the actual performance of a subject on the first task of this experiment. Depending upon the instruction condition to which the subject was assigned, he or she either looked at a data sheet that showed a "subject" who had failed on the first task or a "subject" who had performed moderately well on the first task (see Appendices D & E, respectively). Subjects in the instruction condition were asked to examine the data sheet of a previous subject who had failed on the task. The data sheet contained comments about the previous subject's performance as well as the actual decisions made by this "subject" (see Appendix D). The previous subject's policy decisions were very consistent and the comments on the bottom of the data sheet pointed this

out. As mentioned previously, it was hoped that through vicarious learning the actual subject in this instruction condition might learn about the beneficial aspects of experimentation. The no-instruction data sheet was designed to present innocuous comments that would not affect the subject's decision making in the second task (see Appendix E). After viewing this "previous subject's" data sheet, the subjects began the second task.

Success or failure on the first task was also manipulated in this study. Subjects were given a predetermined criterion that they had to reach before the end of the task (i.e., a defect rate of 0% on the first task and a reversal of the sales decline in the second task). As mentioned previously, the subjects were given feedback on their performance every two weeks. If the subject was in the failure condition, his or her performance always remained below the criterion and there were never any signs of real improvement. If the subject was in the success condition (Task 1 only), he or she steadily improved in terms of decreasing the defect rate until he or she finally reached a zero percent defect rate at the end of the 24-week simulation. If the subject did reach

the criterion on the first task, they were informed of their success. Conversely, the subjects who failed on the first task were informed of their failure to solve the "Jet Engine Problem" (see Appendix I for more detail on the success/failure feedback provided to the subjects). Of course, success or failure was determined by the experimenter--the subject's behavior had no influence on his or her alleged success or failure.

After the subjects completed the two tasks they were fully debriefed and questioned about their behavior. The questionnaires utilized in this study are described in more detail below.

Self-esteem

Self-esteem was measured before the beginning of the first task by the Rosenberg Self-Esteem Inventory (Rosenberg, 1965; see Appendix J). This is a 10-item questionnaire in which subjects are asked to rate the degree to which they agree or disagree with certain statements about themselves. Scores on this scale range from 10 to 40, with a 10 indicating low self-esteem and a 40 high self-esteem. This scale has been found to be valid and highly reliable (Robinson & Shaver, 1973), and it is one of the most commonly used

measures of self-esteem by researchers (Wells & Marwell, 1976; Lorr & Wunderlich, 1986).

Post-test questionnaire

A five-item questionnaire (four additional items were embedded in the five item questionnaire making the total nine items) was completed by each subject after he or she finished both simulations (see Appendix C). The questionnaire was designed to help the subject describe his or her decision-making strategy. In addition, the questionnaire attempted to uncover the emotional reactions of the subjects to either their failure or success. It was hypothesized that the subject's verbal description of his or her strategy would match his or her actual behavior, thus indicating that the subject was aware of his or her decision-making strategies in the face of failure or success. It was also thought that the emotional reactions of the subjects to their success or failure would be related to their decision making as well as to their self-esteem. A correlational analysis was conducted to test these hypotheses.

Criteria. Two measures of consistency and one measure of information search were derived for both Task 1 and Task 2. The number of policy changes during a task and

the time elapsed before changing the original policy were the two measures of consistency. The number of account balance requests during a task was the one measure of information search utilized in this study. This measure has been used in past research (Knight & Nadel, 1986), as have the other two measures. A lack of informati search, or account balance requests, was thought to be related to consistent/committed decision making since a committed individual would probably find this information irrelevant, whereas an experimenting individual would probably find this information relevant to his or her future decisions.

Results

The means, standard deviations, and correlations among the variables directly related to the predictions made in this study are presented in Tables 1 through 2. An overview of these data show that the pattern of results was, in general, the opposite of what was expected. The results of specific predictions will be presented in more detail below.

Self-esteem

The self-esteem scores of subjects in the present study were quite similar to those found in previous research (e.g. Knight & Nadel, 1986). The mean self-esteem score for males was slightly higher than the mean self-esteem score for females (33.8 vs. 32.9; $t = 1.27$, $p > .05$), and overall the self-esteem scores of this college-aged sample was relatively high (33.3). In addition, the reliability of the Rosenberg self-esteem measure was found to be adequately high (alpha = .84).

Trial 1 Predictions

A 2X2X2 ANOVA (previous failure/success X instruction/no instruction X sex) was conducted in an attempt to examine the effects of the independent variables. Sex was included in the analyses because Knight and Nadel, 1986, found sex to be related to

Table 1

Means and Standard Deviations for Success/Fail and Instruction/No Instruction Conditions

Variable		Instruction		No Instruction	
		Success	Fail	Success	Fail
Policy Changes--T1	Mean	.63	2.03	.68	2.45
	s.d.	.87	1.56	.88	1.70
Acct Requests--T1	Mean	2.09	2.00	1.63	2.87
	s.d.	2.73	2.17	2.25	2.72
Time--T1	Mean	17.88	11.43	17.02	10.16
	s.d.	8.16	7.60	8.36	7.90
Policy Changes--T2	Mean	3.40	2.49	3.22	2.26
	s.d.	1.48	1.22	1.31	1.59
Acct Requests--T2	Mean	1.38	.97	1.42	1.21
	s.d.	1.70	1.15	1.36	1.44
Time--T2	Mean	4.75	7.83	6.00	9.16
	s.d.	2.82	4.53	3.80	6.88
Q1--Same D.M.	Mean	4.81	3.97	4.22	3.84
	s.d.	2.07	1.76	1.74	1.37
Q2--Con/Exp D.M.	Mean	4.28	4.11	4.24	3.97
	s.d.	1.76	1.59	1.51	1.62
Q3--S/F Yes/No	Mean	1.03	1.20	1.00	1.16
	s.d.	.18	.41	.00	.44
Q4--S-Changes	Mean	1.75	1.71	1.66	1.97
	s.d.	1.41	1.62	1.18	1.62
Q5--F-Changes	Mean	5.75	4.20	5.68	3.90
	s.d.	1.50	2.64	1.33	2.00
Q6--S-Feel	Mean	5.88	4.17	6.37	4.45
	s.d.	1.70	2.28	.83	1.91
Q7--F-Feel	Mean	2.38	2.20	2.73	2.53
	s.d.	1.16	1.37	.98	1.22
Q8--Background	Mean	3.19	4.46	4.12	3.08
	s.d.	1.40	1.58	1.60	1.24
Q9--Importance	Mean	3.78	4.03	4.02	3.00
	s.d.	1.56	1.56	1.62	1.16

TABLE 3

Correlations of all variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Sex	1.0	.01	-.12	-.07	.13	-.12	-.11	.04	.11	-.07	-.15*	-.02	.08	-.11	-.12	.04	-.12	-.16*	-.09
2. Suc/Fail	-	1.0	-.32*	-.12	.39*	.32*	.11	-.31*	.09	.16*	.07	-.26*	-.05	.10*	.47*	.09	-.01	.14*	.04
3. Changes1	-	-	1.0	.16*	-.85	.04	-.09	.15*	-.06	-.15*	.21*	.09	.15*	-.05	-.18*	-.07	.09	.05	.06
4. Accr-1	-	-	-	1.0	-.08	.00	.65	.21*	-.01	-.12	.03	.03	.06	-.12	.00	.01	-.16*	-.12	.04
5. Time-1	-	-	-	-	1.0	-.05	.08	-.08	.02	.12	-.21*	-.07	-.23*	-.01	.15*	.01	-.14*	-.05	-.05
6. Changes2	-	-	-	-	-	1.0	.07	-.66*	.00	.26*	.29*	-.08	-.04	.31*	.19*	-.10	.05	.15*	-.06
7. Accr-2	-	-	-	-	-	-	1.0	.08	.07	-.10	.01	-.08	.07	.06	.23*	.16*	-.13	.00	.05
8. Time-2	-	-	-	-	-	-	-	1.0	.06	-.15*	-.24	.09	-.07	-.26*	-.13	.00	-.03	-.17*	.12
9. Self-est	-	-	-	-	-	-	-	-	1.0	-.09	-.05	-.07	.03	.06	.13	.19*	-.07	-.02	.02
10. Quest1	-	-	-	-	-	-	-	-	-	1.0	.35*	.09	-.07	.03	-.01	-.32*	.00	.14*	-.10
11. Quest2	-	-	-	-	-	-	-	-	-	-	1.0	.00	-.03	.26*	.00	-.18*	.07	.23*	-.03
12. Quest3	-	-	-	-	-	-	-	-	-	-	-	1.0	-.22*	-.61*	-.72*	-.45*	-.06	-.01	-.07
13. Quest4	-	-	-	-	-	-	-	-	-	-	-	-	1.0	.14*	.16*	.27*	-.02	.03	.03
14. Quest5	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	.66*	.36*	.03	.09	-.03
15. Quest6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	.48*	.05	.09	.12
16. Quest7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	.02	-.19*	.15*
17. Quest8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	.18*	-.07
18. Quest9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-.12
19. Instr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0

* = $p < .05$. Sex was coded: Female=1, Male=2. Success/Fail=1, Success=2.
Instruction was coded: Instruction=1, No Instruction=2.

experimentation in their study, with women changing policies more frequently than men.

In terms of the dependent variable, number of policy changes during the first task, there was a main effect for the success/fail variable (F (1,138) = 53.9, $p < .01$; see Table 3). Subjects who failed changed, on the average, 2.25 times whereas subjects who succeeded changed, on the average, 0.66 times. Of course this is to be expected on the first task, since a subject who is continually succeeding on a task is very unlikely to change his or her policy decisions in contrast to a subject who is continually failing on a task. There was, as expected, no main effect for instruction since the instruction manipulation did not occur until after the first task. In addition, there was not a significant main effect for sex (F (1,138) = 2.2, $p > .05$). Finally, none of the 2-way or 3-way interactions were significant.

The number of account balance requests was also examined during the first task (see Table 4). This variable was predicted to be indicative of experimentation, because the subject is searching for information when he or she requests information about the balance of his or her account. If the subject was consistent/committed in his or her decision-making

Table 3

ANOVA Summary Table. Dependent Measure: Number of Policy Changes Task 1.

Source	df	MS	F	Sig of F
Sex	1	3.81	2.22	--
Success/Fail	1	92.46	53.90	.01
Instruction	1	1.56	0.92	--
Sex X Success/Fail	1	1.89	1.10	--
Sex X Instruction	1	0.30	0.18	--
Success/Fail X Instruction	1	1.46	0.85	--
Sex X Success/Fail X Instr	1	1.35	0.78	--
Error	138	1.72		

Table 4

ANOVA Summary Table. Dependent Measure: Number of Account Balance Requests--Task 1

Source	df	MS	F	Sig of F
Sex	1	3.77	0.61	--
Success/Fail	1	13.98	2.27	--
Instruction	1	1.16	0.19	--
Sex X Success/Fail	1	0.13	0.02	--
Sex X Instruction	1	0.97	0.16	--
Success/Fail X Instruction	1	18.93	3.08	--
Sex X Success/Fail X Instr	1	9.87	1.60	--
Error	138	6.15		

behavior, an account balance would probably seem irrelevant, since he or she feels that the decision made is the correct one even if it is failing and losing money. However, the analysis conducted on this variable revealed no significant main effects or interactions for the independent variables of sex and success/fail (F (1,138) < 1.0, p > .05; F (1,138) = 2.27, p > .05, respectively). (Again, it should be remembered that the instruction and success/fail manipulations will be more relevant to the second trial where the specific predictions of this study will be examined.)

Another measure of experimentation utilized in this study was the time elapsed before changing an original policy decision. (Of course, the time elapsed is a simulated time period from 2 to 24 weeks.) As with the number of policy changes, the only significant effect was for success/fail (F (1,138) = 25.1, p < .01; see Table 5). Again, this is to be expected since a person in the success condition would be very unwise to change a policy when it is consistently successful (i.e. 17.40 weeks, on the average, elapsed before subjects in the success condition changed an original policy decision, while 10.77 weeks, on the average, elapsed before subjects in the fail condition changed

Table 5

ANOVA Summary Table. Dependent Measure: Time Elapsed Before Changing Policies--Task 1.

Source	df	MS	F	Sig of F
Sex	1	143.00	2.24	--
Success/Fail	1	1605.58	25.10	.01
Instruction	1	27.90	0.44	--
Sex X Success/Fail	1	30.04	0.47	--
Sex X Instruction	1	9.06	0.14	--
Success/Fail X Instruction	1	6.32	0.10	--
Sex X Success/Fail X Instr	1	110.15	1.72	--
Error	138	63.97		

an original policy decision).

Trial 2 Predictions

The same analyses reported above were conducted on the Task 2 data. The specific predictions with regard to the success/fail and instruction/no instruction manipulations on a subject's experimenting behavior can now be assessed. The first measure of experimentation, number of policy changes, showed that there was a significant main effect for the success/fail manipulation (F (1,138) = 16.95, $p < .01$; see Table 6). Remember that all of the subjects failed on the second task; the success/fail manipulation involved half of the subjects failing on the first task and half of the subjects succeeding. An analysis of the individual cell means for the second task shows, however, that the pattern is the opposite of what was expected. That is, subjects who succeeded on the first task changed, on the average, 3.30 times during the second task, while subjects who failed on the first task changed, on the average, 2.37 times (see Figure 2).

In terms of the instruction/no instruction manipulation, however, the means followed the predicted pattern (i.e. 2.93 vs. 2.76 policy changes for the instruction and no instruction conditions,

Table 6

ANOVA Summary Table. Dependent Measure: Number of Policy Changes Task 2.

Source	df	MS	F	Sig of F
Sex	1	5.55	2.88	--
Success/Fail	1	32.65	16.95	.01
Instruction	1	2.07	1.08	--
Sex X Success/Fail	1	5.71	2.96	.09
Sex X Instruction	1	0.60	0.31	--
Success/Fail X Instruction	1	0.17	0.09	--
Sex X Success/Fail X Instr	1	2.98	1.55	--
Error	138	1.93		

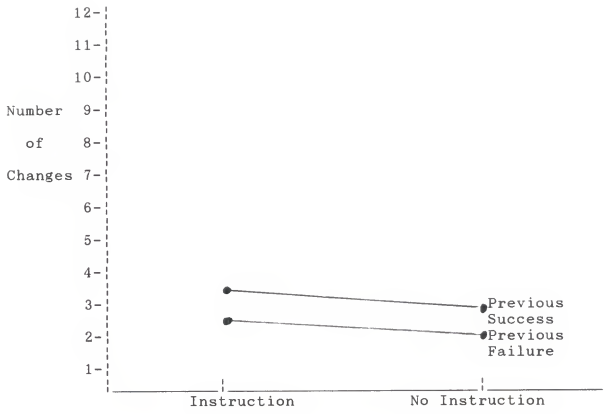


Figure 2

The Effects of Previous Failure and Instruction on the Number of Policy Changes made by a Subject

respectively). However, this difference was not significant (F (1,138) = 1.08, p > .05; see Figure 2). Again, none of the higher-order interactions were significant. It should be remembered that a two-way interaction (success/fail X instruction) was predicted. That is, it was thought that the combination of previous failure and instruction would result in more policy changes than what would be predicted by simply summing the two main effects together. The analysis showed that this was not the case (F (1,138) < 1.0, p > .05).

Finally, ANOVAs were conducted on the remaining dependent variables: number of account balance requests (see Table 7) and time elapsed before changing an original policy decision (see Table 8). First, the ANOVA conducted on the account balance measure revealed no significant results (F (1,138) = 1.66, p > .05; F (1,138) < 1.0, p > .05 for success/fail and instruction, respectively). However, there was a significant main effect for the success/fail manipulation on the amount of time elapsed before changing the original policy (F (1,138) = 15.8, p < .01). Again, however, the pattern of means was opposite of what was expected. That is, subjects who had failed on the first task allowed more time to

Table 7

ANOVA Summary Table. Dependent Measure: Number of Account Balance Requests--Task 2

Source	df	MS	F	Sig of F
Sex	1	3.50	1.76	--
Success/Fail	1	3.30	1.66	--
Instruction	1	0.45	0.23	--
Sex X Success/Fail	1	0.30	0.15	--
Sex X Instruction	1	0.01	0.01	--
Success/Fail X Instruction	1	0.84	0.42	--
Sex X Success/Fail X Instr	1	6.16	3.10	--
Error	138	1.99		

Table 8

ANOVA Summary Table. Dependent Measure: Time Elapsed Before Changing Policies--Task 2.

Source	df	MS	F	Sig of F
Sex	1	13.07	0.58	--
Success/Fail	1	357.33	15.81	.01
Instruction	1	64.89	2.87	.092
Sex X Success/Fail	1	93.68	4.15	.044
Sex X Instruction	1	40.37	1.79	--
Success/Fail X Instruction	1	0.85	0.04	--
Sex X Success/Fail X Instr	1	0.54	0.02	--
Error	138	22.60		

elapse before changing their original policy on the second task than did subjects who had succeeded on the first task (8.52 weeks vs. 5.45 weeks). Once again, there was no main effect for the instruction manipulation on the time elapsed measure (F (1,138) = 2.87, $p > .05$). Further, the success/fail by instruction interaction was not significant (F (1,138) < 1.0, $p > .05$). There was, however, a significant sex by success/fail interaction (F (1,138) = 4.15, $p < .05$). Women who failed on the first task allowed 9.45 weeks to elapse, on the average, before changing an original (Task 2) policy, while women who succeeded allowed 16.82 weeks to elapse, on the average, before changing an original (Task 2) policy decision. Men, on the other hand, who failed on the first task allowed 12.36 weeks to elapse, on the average, before changing an original (Task 2) policy decision, while men who succeeded allowed 18.06 weeks to elapse, on the average, before changing an original (Task 2) policy decision.

One final analysis attempted to assess the potential importance of the instruction manipulation. The analyses reported above did not reveal any instruction effects. Though there were no significant results in these analyses, it seems possible that the

instruction manipulation may only work on subjects who were extremely consistent (operationally defined as not changing policy options during the first task). The instruction manipulation may be unnecessary for subjects who already have a tendency toward experimentation. An ANOVA was therefore conducted on data from subjects who did not change policy options during the first task. The analysis, however, did not reveal a significant instruction effect for the number of policy changes measure (F (1,48) = 2.02, p > .05; see Table 9) or time elapsed measure (F (1,48) = 2.89, p > .05; see Table 10).

Self-esteem effects

In order to assess the relationship between self-esteem and experimenting management, correlational analyses were conducted on self-esteem and the three measures of experimentation utilized in this study. Past research, it should be remembered, showed self-esteem to be negatively related to experimentation (Knight & Nadel, 1986).

The correlation between self-esteem and the measures of experimentation (Tasks 1 and 2) were all nonsignificant (see Table 2). More specifically, on the first task the correlation between self-esteem and the number of policy changes was r = -0.06, between

Table 9

ANOVA Summary Table. Dependent Measure: Number of Policy Changes Task 2. (If Number of Changes on Task 1 Equals Zero)

Source	df	MS	F	Sig of F
Sex	1	4.95	2.91	.094
Success/Fail	1	15.46	9.10	.01
Instruction	1	3.42	2.02	--
Sex X Success/Fail	1	6.18	3.64	.07
Sex X Instruction	1	0.36	0.21	--
Success/Fail X Instruction	1	0.08	0.05	--
Sex X Success/Fail X Instr	1	0.40	0.23	--
Error	48	1.70		

Table 10

ANOVA Summary Table. Dependent Measure: Time Elapsed Before Changing-Task 2. (If Number of Changes on Task 1 Equals Zero)

Source	df	MS	F	Sig of F
Sex	1	10.68	0.69	--
Success/Fail	1	14.67	0.94	--
Instruction	1	44.91	2.89	.096
Sex X Success/Fail	1	193.21	12.43	.01
Sex X Instruction	1	0.00	0.00	--
Success/Fail X Instruction	1	0.13	0.01	--
Sex X Success/Fail X Instr	1	69.14	4.45	.04
Error	48	15.54		

self-esteem and the number of account balance requests was r = -0.01 , and between self-esteem and the amount of time elapsed before changing an original policy decision was r = 0.02. On the second task, the correlation between self-esteem and the number of policy changes was r = 0.00, between self-esteem and the number of account balance requests was r = 0.07, and between self-esteem and the time elapsed before changing an original policy decision was r = 0.06. In addition, self-esteem was not significantly correlated with sex (r = 0.11, $p > .05$; coded female = 1, male = 2) as had been found in previous research (e.g. Knight & Nadel, 1986). In fact, the only variable significantly correlated with self-esteem was question 7 of the post-test questionnaire, "How did you feel when you thought you were failing," (scale ranged from 1 very bad, to 7 very good; r = 0.19, $p < .01$).

The lack of overall self-esteem effects may have resulted from there being a positive correlation between self-esteem and experimentation in one group (i.e. the success or fail group) and a negative correlation between self-esteem and experimentation in the other group. A correlational analysis on the separate groups again revealed no significant

correlations between self-esteem and the three measures of experimentation. Although the correlation between self-esteem and the number of policy changes on the second task was in the predicted direction in the success group, the correlation was not significant (r = -.13, p > .10).

Self-esteem vs. Reactance theory

An attempt was made to contrast the competing theories of reactance theory and self-esteem (see Introduction), in order to find the one theory that best explains the increase in experimentation after failure (Staw & Ross, 1978). Recall that in this study, the predictions made by reactance theory and a "malleable self-esteem theory" are identical when a subject suffers a previous failure on a task and is then asked to perform the same or similar task a short time later (i.e. the prediction is that the subjects will increase their experimenting behavior).

In regard to "malleable self-esteem theory," the present study did not find a relationship between self-esteem and experimentation (r (2nd task) = .00). Thus there is no reason to expect that subjects will experiment more when their self-esteem is theoretically lowered after a failure ("malleable" self-esteem theory). This lack of a relationship indicates that

self-esteem and experimentation may not be as strongly related as originally thought and therefore a possible explanation for increased experimentation after failure based on a decrease in self-esteem is questionable. (Note that it is still possible that a subject's self-esteem lowers after a previous failure, but according to the results from this study, the lowered self-esteem is not related to his or her increased experimentation.)

In addition, the lack of increased experimentation (from 2.25 policy changes on the first task to 2.37 policy changes on the second task) found for both low and high self-esteem subjects after a previous failure, raises questions about the validity of both reactance theory and "malleable" self-esteem theory explanations. Recall that both of these theories predict a significant increase in the amount of experimentation after a previous failure. Therefore the evidence from the present study does not support reactance theory or "malleable" self-esteem theory.

Post-test Questionnaire

Subjects who did succeed on the first task not only showed, behaviorally, an increased tendency toward experimentation on the second task, they also acknowledged this tendency cognitively, by stating on

the post-test questionnaire that they changed policies during failure ("Did you change policies when you felt you were failing?" mean response = 5.7 ; scale, 1 = "definitely did not change" to 7 "definitely did change"). (See Tables 1-2 for the post-test questionnaire results.) In contrast, subjects who failed on the first task had an average response of 4.0 on this question. The correlation between fail/success (coded 1, 2, respectively) and the subject's response to this question was statistically significant (r = .40, $p < .01$).

As can be seen in Tables 1-2, there is a large difference (6.2 vs. 4.3) between the mean responses of subjects in the success and fail conditions to question 6 ("How did you feel when you thought you were succeeding?" r = .47, $p < .01$). This difference is expected since subjects in the fail condition never had the opportunity to succeed and therefore probably just gave the average response to this question.

As predicted, there was a significant correlation between question 7 ("How did you feel when you thought you were failing?") and self-esteem (r = .194, $p <$ .01). This suggests that subjects higher in self-esteem tended to be less concerned with failure than subjects lower in self-esteem. However, in this

study this relative lack of concern among high self-esteem subjects was not reflected in any lack of experimentation when compared to low self-esteem subjects.

There was a significant correlation between question 9 ("Do you think it is important to remain consistent (staying with a certain policy or decision) even in the face of failure?") and the fail (coded 1) and success (coded 2) conditions (r = .139, p < .05). In addition, there was a significant correlation between question 1 ("Was your decision making the same during the first and second tasks?") and the success/fail manipulation (r = .165, p < .05). Of course, this is consistent with the results presented earlier (i.e. subjects in the success condition became significantly more experimenting during the second task, while subjects in the fail condition did not change their decision making from task to task).

Finally, question 3 ("Did you know when you were failing or succeeding on these tasks?" coded 1 = yes, 2 = no) was also significantly correlated with the success/fail manipulation (r = -.259, p < .01). (In addition, 92% of the subjects agreed with this statement, 99% in the success condition and 85% in the fail condition. Given the restricted variance of this

item, this correlation is relatively high.) Question 4 ("Did you change policies when you were succeeding?"), on the other hand, was not correlated with the success/fail manipulation (r = -.052, p > .05). The results from both question 3 and question 4 can be explained by noting that subjects in the fail condition never experienced success and therefore did not know when they were succeeding. (However, since question 3 asks about *both* failing and succeeding it could be suggested that failing subjects did not realize they were failing because they had denied reality.)

In an attempt to look for interaction effects, a multivariate analysis of variance (MANOVA) was conducted on the nine questions from the post-test questionnaire. The multivariate F was significant for the interaction between success/fail and instruction (F (8, 130) = 3.14, p < .01).

The significant success/fail by instruction interaction was explained by question 8 (F (1,138) = 22.2, p < .01) and question 9 (F (1,138) = 5.76, p < .05) of the post-test questionnaire. Subjects rated the background stories as having more of an effect on them (question 8) when they were in the success and instruction condition as compared to when they were in

the success and no instruction condition; conversely, subjects rated the background stories as having more of an effect on them when they were in the failure and no instruction condition as compared to when they were in the failure and instruction condition. In question 9, subjects thought it was less important to remain consistent to a failing policy when they were in the failure and instruction condition as compared to when they were in the failure and no instruction condition. Subjects in the instruction and success group and subjects in the no instruction and success groups, however, did not differ significantly in their response to this question.

Discussion

The present study attempted to examine variables thought to be related to experimenting management. In addition, since it has been pointed out that experimentation can be beneficial in management contexts (Campbell, 1969), an instruction condition was included in this study. The study, therefore, not only attempted to better understand experimenting management, it also attempted to instruct subjects to become more experimenting when a certain policy decision was failing.

In terms of this study's first objective, the results reported above show that some of the variables thought to be related to experimentation may not be as strongly related as originally thought. For example, in this study self-esteem was not found to be related to experimentation although it has in past research (e.g. Knight & Nadel, 1986). It is possible, of course, that self-esteem and experimentation are only related to each other in certain situations. In the Knight and Nadel study, for example, subjects received feedback, on the average, every 3.23 weeks (in a 24 week simulation very similar to the present simulation), whereas they received feedback every two weeks in the present study. Thus in the Knight and Nadel study, subjects received feedback

approximately eight times during the entire simulation, while in the present study subjects received feedback twelve times. It seems possible, therefore, that self-esteem may play more of a role in experimenting management when the amount of feedback is somewhat limited.

When subjects are failing on a task and are receiving a relatively large amount of feedback informing them of their failure, it seems plausible that they will be more inclined to change policies regardless of their self-esteem. However, when negative feedback is more limited, the person with high self-esteem may be more likely to stay with a certain policy since their failure may seem less obvious or inevitable. When more constant feedback is provided, the high self-esteem subject can no longer rely on self-justification to remain with a failing policy. Thus, according to this hypothesis, the relationship between self-esteem and experimentation may be more situationally specific than once thought. If this is the case, the negative effects thought produced by a high self-esteem manager who is failing can be greatly reduced by providing more feedback to him or her.

Another variable found to be unrelated to experimentation was instruction. Various theories can be

offered in an attempt to explain why the instructing of subjects in the positive aspects of experimentation had no effect. The most likely explanation is that the manipulation in this study was too weak. In an effort to avoid demand characteristics, the instruction had to be done subtly, and this may have reduced its potential effectiveness. As a result, the subjects in the instruction condition may not have been instructed as it was assumed they were. Instruction could still be beneficial in certain contexts and therefore should not be dismissed because of the results from this study. That is, in a real work situation, managers will not be concerned with demand characteristics and will provide "true" instruction on the beneficial aspects of experimentation. A stronger manipulation such a this may produce the results that were expected in this study (i.e. an increase in experimentation with instruction).

However, recall that there was a significant instruction by success/fail interaction for question 9 of the post-test questionnaire ("Do you think it is important to remain consistent even in the face of failure?"). Examining the means from these groups revealed that instruction did have an effect when subjects were in the failure group. That is, subjects in

this condition thought it was less important to remain consistent in the face of failure. Thus, subjects may at least realize cognitively that remaining committed to a failing policy is not a wise decision. It is possible that subjects in the instruction/fail condition did not increase their experimentation on Task 2 because they may have felt that they had experimented as much as they could and still failed (i.e. on the average, they changed 2.49 times on the second task which means that most of the subjects tried each policy, or at least two of the policies, at least once). Thus there may have been a ceiling effect on the amount of experimentation for this group (of course, these subjects could have changed twelve times, but they could also try every possible policy with just two policy changes). It is possible, of course, that the reason instruction had no differential effects on subjects in the success condition was because these subjects simply ignored this information, finding it irrelevant to their situation.

There was also a significant instruction by success/fail interaction for question 8 of the post-test questionnaire. However, because of the way this question was worded, no simple interpretation of this interaction is possible.

The lack of support found for reactance theory was also unexpected. Recall that Staw and Ross (1978) found reactance theory to be the best predictor of their results on the escalation of commitment. There are at least two explanations for why reactance theory was not supported in this study. First, it is possible that subjects who failed on the first task saw their failure as resulting from chance factors. Recall that Staw and Ross (1978) found support for reactance theory when subjects attributed their previous failure to endogenous rather than chance factors. Second, the subjects may have viewed the two tasks in this study as separate and, as a result, the effects of Task 1 failure may not have carried over to a related Task 2 failure.

Though the results from this study did not match the predictions made by reactance theory, the results did match learned helplessness theory as described by Staw and Ross (1978) and Garber and Seligman (1980). Staw and Ross note, "if an individual has met with repeated failure in his previous decision making, he may conclude that there is no relationship between action and consequences and therefore cease to utilize relevant information in decision situations. The learned helpless individual is extremely low in prospective focusing and

tends to simply repeat the same behavior, even if this behavior is inappropriate for a new set of circumstances. With a learned helplessness effect, commitment would thus likely remain high even with repeated negative consequences" (p. 45).

Subjects who had previously failed on the first task, it should be remembered, changed fewer times on the second task than subjects who had previously succeeded on the first task. It is possible, according to learned helplessness theory, that the subjects who had previously failed did not increase their experimenting on the second task (2.25 policy changes vs. 2.37 policy changes) because they had discovered that their behavior (experimenting decision making) was unrelated to their ultimate success or failure.

Though these subjects changed policies 2.37 times on the second task, this was not a significant increase from 2.25 changes on the first task. In fact, the consistency of this measure provides support for Staw and Ross' (1978) learned helplessness explanation that the subjects simply repeated their same behavior (i.e. change policies approximately two times) on the two tasks. Subjects in the success condition, however, increased their experimentation from 0.66 policy changes on the first

task to 3.30 policy changes on the second task. Since the subjects who succeeded on the first task thought their decision making was related to their success, they were more willing to try new policies and experiment since they probably believed it would eventually lead to a reversal in the sales decline (second task scenario) and thus allow them to succeed (i.e. these subjects had made a connection between their behavior and their consequences). Subjects who had previously failed, on the other hand, may have simply decided to get the task over with and not try other policy options (or simply repeat their same Task 1 behavior) since they probably felt that regardless of which policy they chose it would not lead to success (learned helplessness). (See Staw & Ross, 1978.)

In order to more directly test this learned helplessness explanation an analysis was conducted in which each task (Task 1 and Task 2) was divided into two separate time periods (i.e. week 1 to week 12 vs. week 12 to week 24). It would be predicted according to Staw and Ross' (1978) learned helplessness explanation, that subjects would either experiment less or experiment to the same extent on the second half of the task if they failed on the first part of the task. (According to Staw

and Ross' definition, the only evidence that would not support learned helplessness would be the finding that subjects increased their experimentation on the second half of the tasks.) An ANOVA was therefore conducted on each of these separate time periods for the number of policy changes dependent measure. Subjects did not decrease their experimentation significantly on the second half of the task when they had previously failed (e.g. on Task 2 subjects changed, on the average, 1.1 times during the first 12 weeks of the task and changed, on the average, 0.97 times during the last 12 weeks of the task; F (1,72) = 2.16, $p > .05$). In addition, subjects decreased their experimentation significantly on the second task when they were in the success condition (i.e. 1.69 changes, on the average, in the first 12 weeks and 1.34 changes, on the average, in the final 12 weeks; F (1,72) = 6.39, $p < .05$).

A possible explanation for why reactance theory was not supported in this study is that the failure on the first task may have been too discouraging for the subjects. Research by Brockner, Gardner, Bierman, Mahan, Thomas, Weiss, Winters, and Mitchell (1983) and Brehm and Brehm (1981) lends support to this hypothesis. These researchers suggest that learned helplessness and

reactance theory are related in that a person who has experienced continued failure will experience learned helplessness, but a person who has experienced less severe, or moderate, failure will experience reactance and thus try to improve his or her performance. In the Staw and Ross (1978) study the first task consisted of only one policy decision and therefore if the subject failed he or she was provided with negative feedback only once (thus allowing reactance rather than helplessness to be activated in the subject). (In the present study, subjects were provided with negative feedback 12 times during the first task.) In addition, Staw and Ross provided subjects with an explanation (endogenous or exogenous) for why their decision failed, the present study, on the other hand, did not. These explanations may have allowed subjects who failed a reason to change policies at future opportunities.

Thus it seems that in this study the relevant factor in the amount of experimentation on a future task is the belief that one's behavior or, more specifically, one's decision making, is not futile but rather is directly related to one's consequences. In fact, if a subject succeeds on the first task and fails on the second task, he or she will not become "super-committed" to his or her

decisions on the second task (this is especially true during the first part of the second task), but will rather have the freedom to question his or her behavior and try other policy options (a type of reactance theory that does not rely strictly on a "previous" failure, but can also include present failure). A subject who previously succeeds, in other words, builds up enough "credit" to not have to protect his or her public image and can thus experiment with other policy options until the correct one is found.

Conclusion

The results from this study, though inconsistent with some of the predictions made earlier, should provide a more clear and comprehensive view of experimenting management. The following is a brief summary of this study's major findings.

1) Self-esteem may not be as strongly related to experimenting management as originally thought. This is especially true when subjects are provided with a great deal of negative feedback on their performance.

2) Instructing subjects to be more experimenting may only be effective when the instruction is explicit. More research is needed in order to find the type and degree of instruction necessary. However, recall that subjects did seem to understand the importance of experimenting when they were in the instruction and fail condition.

3) According to the present findings, a person who succeeds on a task does not necessarily become

less experimenting (i.e. more committed) on a subsequent task. The person may actually become more experimenting in the subsequent task if he or she is failing. This could result from not having to be as defensive about his or her decision making as a person who continually fails on a task. A person who always fails and never succeeds may decide that his or her decision making is not related to the outcomes and thus experience learned helplessness.

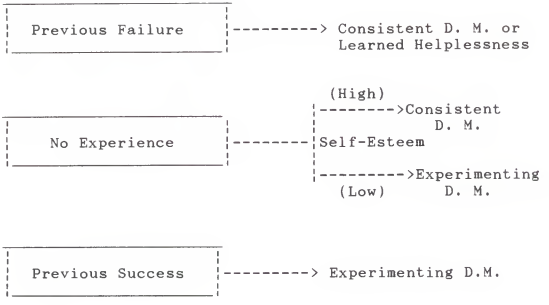
4) Reactance theory will probably not be relevant in situations where a person is experiencing learned helplessness.

These results do provide a simplified model of some of the relevant variables that determine whether a person's decision making is experimenting or consistent (see Figure 3). Note that self-esteem will have its strongest effect on experimenting or consistent decision making when the subject has no previous experience with the current task.

The results do provide some practical benefits to organizations as well. To begin with, the benefits provided by high or low self-esteem in managers are situationally determined. Providing constant feedback may eliminate any confounding effects produced by self-esteem. Second, providing positive feedback on a previous task may allow a person to become more experimenting on a subsequent task where he or she is failing. Third, constant negative feedback could result

Figure 3

Variables Related to Whether a Person will be Experimenting or Consistent in his or her Decision Making



Note: Explicit instruction can affect the decision making at any point in this figure.

in a learned helplessness condition. This learned helplessness may be partially avoided if the person is provided with explanations for why he or she failed or is failing on a task. These explanations can help the person understand his or her mistakes and make his or her failure seem less unavoidable in the future. Finally, an instruction program that clearly states its objectives may provide an opportunity for an overly consistent individual to become more experimenting in his or her decision making. Though a program such as this was not specifically examined in this study, the benefits provided by a manager who is willing to question his or her past decision making and who is able to experiment with new and more effective programs should provide us with an incentive to try new instruction methods that will not only produce more experimenting managers, but also produce more research on the field of experimenting and consistent decision making.

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Appendix A

(Task One Instructions-Jet-Engine Scenario)

"Welcome to the management computer simulation, or MCS. MCS is a computer program that simulates a number of common organizational problems, and asks you to play the part of a manager whose task it is to solve one of these problems within a given period of time. You will be working on a problem called 'the jet engine problem.' In just a moment information about this problem will be presented..."

"Several times during the simulation you will be asked to choose between several options. The computer will present your options, and tell you to type in a number corresponding to the option you want..."

"Now to explain the simulation. This version of MCS is called 'the jet engine problem.' It is based upon actual reports of similar events in a large manufacturing company, and the solution is based upon what was done to solve that company's problem. You will play the role of the manager of a division of a large airline corporation. You supervise six foremen and are personally responsible for all policy decisions made in your division."

"In the past year a serious production problem has developed in your division. During this time the percentage of defective engines being produced has risen from zero

percent to two percent. Major air disasters have occurred more frequently as a result of these defects. The FAA (Federal Aviation Administration) has stated that the defect rate must not be above zero percent. The higher the percentage of defective jet engines the more likely it is that people will be killed in airplane crashes. Not only do you want to save lives, you also want to make a profit. That is, you have to stay in business if you want to make money. The amount of money your company makes will be related how good your jet engines are. If they are good (zero percent defect rate) you will not only make money but also save lives."

"To try to find out why the number of defective engines has risen, you hired a consultant to come to the factory, examine your production line, and recommend a solution to your problem. After a thorough examination of the facility, the consultant suggested three possible remedies to your problem."

"The consultant's suggestions are:

1. Increase the number of inspectors at several points in the production process, thereby reducing the chances that an error at an early production stage wqould go unnoticed and eventually ruin an engine.
2. Redesign the engines to avoid structural problems

that could be increasing the chances for the type of defects you are having.

3. Use stronger metals which would be less likely to develop defects. These metals would be more expensive than those currently in use, but if they reduce the defect rate, it might pay off."

"The consultant stressed that it was not possible to to determine the exact cause of the production problem, and that he could make no guarantees about which of the plans would sovle the problem, or how quickly any of th plans would solve the problem, or how quickly any of the plans might work. He was, however, able to rank the three plans in the order of their estimated effectiveness, based upon his past experience in similar situations. The consultant's ranks (from best to worse) were:

1. Hiring new inspectors
2. Redesigning the engines
3. Using stronger metals

The consultant estimated that all of the plans would cost the same amount to implement."

"Before taking any action, you held a meeting with your foremen to get their ideas on the three plans. Generally, the foremen agreed with the consultant's ranks, though they also felt that it would be impossible to make any guarantees

about which plan would be successful."

"Rules for the game: (for simplicity this simulation will use dollar amounts and decreased defect rates as the measure of success, not saved lives.)

1. You will start out with $10,000 in your operating operating budget. This amount will be increased or decreased during the simulation, depending upon what you do and how successful you are.
2. It will cost you $1000 to implement your first policy, or to change to a new policy later on. This is to cover the costs of the new policy (e.g. hiring new workers, purchasing new materials, etc.).
3. It will cost you $100 for each week that the defect rate is above two percent. You will earn $100 for each week that your policy has lowered the defect rate below two percent.
4. It will cost you $50 to find out how much money is left in your operating budget.
5. At least one of the policies will solve the production problem. You should be aware, however, that the correct policy may or may not solve the problem immediately. That is, while implementing the correct policy may reduce the defect rate in a few weeks, it may have to be in effect for a longer

period of time before it will solve the problem. When you change policies, the old policy will be discontinued.

6. You have 24 weeks to solve the production problem.
7. You will receive feedback on how you are doing every two weeks.
8. Your goals are to solve the production problem before the 24 weeks are up by reducing the defect rate to zero percent, and to have as much money left as possible."

Appendix B

Task 2 Simulation*

"Welcome back to the management computer simulation, or MCS. MCS is a computer program that simulates a number of organizational problems, and asks you to play the part of a manager whose task it is to solve one of these problems within a given period of time."

"As a result of your performance on the first task, your superiors have decided that you should be transferred to the sales and public relations department of this company. It is thought that your managerial skills could be used more effectively there than at the jet engine division..."

"Now to explain the simulation. This version of MCS is called the 'ticket bureau problem.' It is based upon actual reports of similar events in a large sales and manufacturing company, and is based upon what was done to solve that company's problem. You will play the role of the manager of a division of a large airline corporation (the same company you worked for on the first task). Your division is interested in increasing the sales of a ticket bureau in the North central United States. You are personally responsible for all decisions made in your division."

"In the past year the sales from this ticket bureau have decreased by 2% (this 2% decrease translates into millions of dollars of lost profits). Your supervisors are quite upset about this decline and expect you to be able to turn things around and curb this decline. Thus your task is simple, you must stop this decline and get sales back to normal. Doing so will mean that your company will save millions of dollars in lost profits."

"To try to find out why the sales have decreased, you hired a consultant to come to your office and recommend a solution to your problem. After a thorough examination of the ticket bureau, the consultant suggested three possible remedies to your problem."

"The consultant's suggestions are:

1. Lower the cost of passenger airline tickets thus increasing the number of ticket sales, but also lowering the profit made on each individual sale.
2. Implement a national advertising campaign to attract new business.
3. Begin a frequent flyer program whereby frequent flyers get special bonuses for traveling a lot on your airline, thus keeping reliable customers and possibly attracting new ones."

"The consultant stressed that it was not possible to

determine the exact cause of the sales decline, and that he could make no guarantees about which of the plans would stop the decline, or how quickly any of the plans might work. He was, however, able to rank the three plans in the order of their estimated effectiveness, based upopn his past experience in similar situations. The consultant's rank (from best to worst) were:

1. Lower the cost of tickets
2. Advertising campaign
3. Frequent flyer program

The consultant estimated that all of the plans would cost the same amount to implement."

"Before taking any action, you held a meeting with your subordinates to get their ideas on the three plans. Generally, the employees agreed with the consultant's ranks, though they also felt that it would be impossible to make any guarantees about which plan would be successful."

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* The rules and procedures for this second scenario are essentially identical to the rules and procedures for the first scenario. Refer to Appendix A for more details.

Appendix C

Please answer the following questions by circling the number that best corresponds to your reaction to that question. Please feel free to write in any additional comments you may have at the end of this questionnaire.

1. How would you describe your decision-making during this task? (Please comment.)

   Was your decision-making the same during the first and second tasks?

1	2	3	4	5	6	7
exactly the same			somewhat different			very different

2. Do you think you were consistent (stayed with a specific policy/decision) or experimenting (changed your policies/ decisions during the task) in your decision making?

1	2	3	4	5	6	7
very consistent						very experimenting

3. Did you know when you were failing or succeeding on these tasks? ____Yes ____No
   (If you answered yes to the above question, please answer the following questions below. If you answered no, go on to question #4.)

   Did you change policies when you felt you were succeeding?

1	2	3	4	5	6	7
definitely did not change			somewhat			definitely did change

   Did you change policies when you felt you were failing?

1	2	3	4	5	6	7
definitely did not change			somewhat			definitely did change

How did you feel when you thought you were succeeding?

1	2	3	4	5	6	7
very bad			neither good nor bad			very good

How did you feel when you thought you were failing?

1	2	3	4	5	6	7
very bad			neither good nor bad			very good

4. Did the stories that you read, which provided the background for your task, have any effect on your decision-making?

1	2	3	4	5	6	7
large effect			moderate effect			no effect

5. Do you think it is important to remain consistent (staying with a certain policy or decision) even in the face of failure?

1	2	3	4	5	6	7
very important			somewhat important			not important

Comments:

Appendix D

(Instruction Data Sheet*)

Subject # 11

Week	Policy	Defect Rate
0	--	2.0
2	1	2.2
4	1	2.3
6	1	2.3
8	1	2.5
10	1	2.4
12	1	2.7
14	1	2.8
16	1	2.7
18	1	2.9
20	1	2.9
22	1	2.6
24	1	2.8

Comments: Subject's performance was very poor. Stayed with original policy long after it was clear that it would not work. It is generally more effective to experiment with different policies to find one that works.

* The data-sheet given to the subjects was hand-written.

Appendix E

(No-Instruction Data Sheet*)

Subject # 22

Defect Rate after 24-week period 0.4%.

Comments: Subject's performance was fairly good.

*The data-sheet given to the subjects was hand-written.

Appendix F

(Instruction data sheet to be filled out by subject*)

Subject # __

Week	Policy	Defect Rate
0	--	2.0
2		
4		
6		
8		
10		
12		
14		
16		
18		
20		
22		
24		

Comments:

* The data-sheet given to the subjects was hand-written.

Appendix G

(No-Instruction Data Sheet*)

Subject # __

Defect Rate after 24-week period ___

Comments:

*The data-sheet given to the subjects was hand-written. Subjects only entered their final defect rate on this sheet.

Appendix H

(Beginning Statement)

Since this is a learning task and you will be allowed to see the performance of a previous subject and a later subject will be allowed to see your performance, we ask that you keep track of how you did during this task. This is the form you will be using (show form), once you get started on the task the form will become self-explanatory. The comments will be added by me (the experimenter), according to a set of predetermined criteria once you are completely finished with this experiment. Your data sheet will then be given to a later subject to examine when he or she has completed the same task that you have. Your confidentiality is assured, please do not put your name on this sheet.

After you have completed the first task please inform me. At that time I will give you the data sheet from the previous subject who performed this task. Please read over the data sheet and the comments. When you are finished looking over this subject's data sheet let me know. At that time the second half of this experiment will begin.

Appendix I

(Success/Failure Feedback-Tasks 1 and 2)

Task 1-Success feedback

"Congratulations, you solved the 'jet engine problem.' After 24 weeks the defect rate is at 0%. You have (*) dollars left in your account. If you have any questions about this game, please ask the experimenter. Thank you for participating in this project."

Task 1-Failure feedback

"Your 24 weeks are up. During this time the defect rate remained above zero percent (the defect rate is now at 2.6%). Which means that you failed to solve the production problem. You have (*) dollars left in your account. If you have any questions about this game, please ask the experimenter. Thank you for participating in this project."

Task 2-Failure feedback

"Your 24 weeks are up. During this time the sales did not significantly increase, which means that you failed to solve the the ticket's bureau's sale decline. You have exactly (*) dollars left in your account. If you have any questions about this game, please ask the experimenter. Thank you for participating in this

project."

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* The amount of money left in each subject's account varied depending on how much he or she requested an account balance during the simulation, if he or she was in the success or failure condition (task 1 only), and the number of policy changes he or she made. (See Appendix A for more information on the rules of the game.)

Appendix J

Instructions: Indicate your agreement with each of the following statements by circling the appropriate number after each statement:

1. Strongly agree (SA) 2. Agree (A) 3. Disagree (D) 4. Strongly disagree (SD)

---

1. I feel that I'm a person of worth, at least on a equal basis with others.....SA A D SD

1 2 3 4

2. I feel that I have a number of good qualities.....SA A D SD

1 2 3 4

3. All in all, I am inclined to feel that I am a failure.....SA A D SD

1 2 3 4

4. I am able to do things as well as most other people.....SA A D SD

1 2 3 4

5. I feel that I do not have much to be proud of.....SA A D SD

1 2 3 4

6. I take a positive attitude toward myself.....SA A D SD

1 2 3 4

7. On the whole, I am satisfied with myself.....SA A D SD

1 2 3 4

8. I wish I could have more respect for myself.....SA A D SD

1 2 3 4

9. I certainly feel useless at times....SA A D SD

1 2 3 4

10. At times I think I am no good at all.....SA A D SD

1 2 3 4

The Effect of Previous Failure and Instruction on Experimenting versus Consistent Decision Making

by

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B.A., Winona State University, 1985

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Abstract

Past research has noted the beneficial aspects of experimenting management (e.g. Campbell, 1969). Experimenting managers, in contrast to committed or consistent managers, are people who are open to feedback and are willing to change policies or decisions. Research has shown that certain variables can enhance a person's likelihood of becoming consistent rather than experimenting in his or her decision making (e.g. self-justification and self-esteem). The present study was a first attempt at making individuals more experimenting rather than consistent in their decision making.

Subjects, through vicarious learning, were instructed about the beneficial aspects of experimenting management. Subjects also suffered previous failure in an attempt to make them more experimenting in a future task (reactance theory). It was predicted that previous failure and instruction would cause a subject to become more experimenting in a subsequent task. The results, however, showed that previous failure and instruction had no major effect on experimentation. In fact, subjects who had previously failed were more consistent in their decision making

than subjects who had previously succeeded on a task. Learned helplessness was discussed as a possible reason for why these subjects became more committed to their decisions. Finally, practical applications of this research were also discussed.