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TO A PREVIOUSLY CHOSEN COURSE OF ACTION

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Abstract

Previous research has shown that individuals are most likely to escalate the amount of resources committed to a course of action when they have been personally responsible for negative consequences (Staw, OBHP, in press). The present study examined the process of escalation over three points in time and under four experimental conditions. A 2x2x3 factorial experiment was conducted in which personal responsibility, efficacy of resources, and time were the independent variables, and commitment of resources to a course of action was the dependent variable. The results replicated the escalation effect over an immediate time period, but showed that investment of resources in a course of action was not stable over time. Although there were immediate effects of personal responsibility and efficacy of resources upon escalation behavior, these two variables interacted with the time factor.

Escalation: The Determinants of Commitment
to a Previously Chosen Course of Action

Few important organizational decisions are free from subsequent reevaluation or consideration. Instead, a large number of critical decisions resemble an investment context in which resources are allocated to one alternative over others and in which the level of resources may subsequently be increased or decreased. For example, in both the public and private sector, policy-makers may ponder two or more alternatives for which to invest a quantity of resources, and, depending upon the results of this initial investment decision, the level of resources committed to the course of action may then be dramatically increased or decreased. The research reported here is aimed at studying the determinants of escalation in investment decision contexts. Of particular interest is the effect of adverse consequences upon the decision to escalate or withdraw resources from a previously chosen course of action.

To date, there has been little empirical research specifically designed to examine the investment decision context, and, as a result, it is difficult to determine whether adverse consequences will lead to the withdrawal of resources or escalation. Intuitively, one might expect individuals simply to reverse decisions or change behaviors which result in negative consequences. Yet, some indirectly related studies have found that when a person's behavior leads to negative consequences, he may, instead of changing his behavior, cognitively distort the negative consequences to more positively valenced outcomes (e.g. Freedman, 1963; Pallak, Sogin, & Van Zante, 1974; Staw, 1974, 1975; Weick, 1964). The mechanism underlying this biasing of behavioral outcomes is often characterized as a self-justification process in which individuals seek to rationalize their previous behavior or psychologically defend themselves against a perceived error in judgement (Aronson, 1968, 1972; Festinger, 1957).

In many situations it is also possible for individuals to go beyond the passive distortion of adverse consequences in an effort to rationalize a behavioral error. For example, when negative consequences are incurred within an investment context, it is often possible for a decision-maker to greatly enlarge the commitment of resources and undergo the risk of additional negative outcomes in order to justify prior behavior or demonstrate the ultimate rationality of an original course of action. Rather than accept an immediate loss and withdraw from a poor investment alternative, many decision-makers may be prone to commit new and additional resources. However, since higher levels of commitment may also lead to greater and greater material losses, self-justification can lead one into a costly circle of escalation. Within the sphere of governmental policy-making, just such an example of escalating commitment was described by George Ball, the former Undersecretary of State, in some early predictions of U.S. involvement in Indochina.

...Once large numbers of U.S. troops are committed to direct combat, they will begin to take heavy casualties in a war they are ill-equipped to fight in a non-cooperative if not downright hostile countryside. Once we suffer large casualties, we will have started a well-nigh irreversible process. Our involvement will be so great that we cannot--without national humiliation--stop short of achieving our complete objectives. Of the two possibilities, I think humiliation would be more likely than the achievement of our objectives--even after we have paid terrible costs. (Memo from George Ball to President Lyndon Johnson, July, 1965; source: The Pentagon Papers, 1971.)

Obviously, many factors influenced governmental decision-making in the commitment of men and material to the war in Indochina. Nonetheless, the comments of this high level official do underscore the need for research on the determinants of escalation in resource investment decisions. Although group, organizational, and large-scale political factors can affect the commitment of resources in a given situation, there may also be a significant individual tendency to escalate following the receipt of negative consequences. If so, this information

is of relevance to effective policy formulation, be it in government, business, or voluntary organizations.

Previous Research

There has been only one empirical study which has dealt specifically with the process of escalation in investment decision contexts.² Recently, Staw (in press) conducted an experiment in which undergraduate business students were asked to play the role of a financial executive in deciding upon the proper allocation of research and development funds. Subjects were asked to act as the Financial Vice President of a large technologically-oriented firm in working on a business decision case. After studying the financial history of this hypothetical company, subjects were asked to recommend the allocation of research and development funds to either the consumer or industrial products division of the firm, and to write a paragraph justifying the basis for this dichotomous decision. Subsequently, these same subjects were given financial information showing either an improvement or continued decline in the sales and earnings of each corporate division. Finally, after receiving this information, subjects were asked to make a second investment decision dividing additional R&D funds in any way they wished between the two corporate divisions.

Decision consequences were manipulated in the Staw (in press) experiment through the random assignment of financial information. Some subjects were provided information that the division initially chosen for extra R&D funds performed better than the unchosen division, while others were given information that the chosen division subsequently performed worse than the unchosen division. In addition to the manipulation of decision consequences, the experiment also varied the level of personal responsibility for consequences. One half of the subjects were randomly assigned to the high personal responsibility condition in which two investment decisions were sequentially made by the subject.

This condition entailed the two-part financial decision case described above in which subjects made an initial decision to allocate R&D funds, discovered its consequences, and then made a second investment decision. However, one half of the subjects were also randomly assigned to a low personal responsibility condition in which the entire financial decision case was presented in one section. In the low personal responsibility condition, subjects were asked to make the second allocation decision without having made a prior choice as to which corporate division was most deserving of R&D funds. Subjects in this condition were told in the case that an earlier R&D funding decision had been made by another financial officer of the company and that the preceding officer had decided to invest all of the R&D funds in the consumer (or industrial) products division. The financial information presented to low personal responsibility subjects was identical to that given to other subjects except for the fact that the case's scenario began at a later point in time and necessitated making the second investment decision without having participated in an earlier choice.

Staw had predicted, in accordance with self-justification theory, that individuals would invest the greatest amount of resources when they were personally responsible for negative consequences. And, as expected, there were significant main effects of decision consequences and personal responsibility such that the greatest commitment of resources occurred under negative rather than positive consequences and under high rather than low personal responsibility. Also, as predicted, there was a significant interaction such that commitment was even greater when individuals were personally responsible for negative consequences than could be expected by the additive effects of these two separate factors. In short, the data of this previous experiment provided strong evidence that escalation of commitment can result from adverse consequences in an investment decision context.

The present study is designed to expand upon the earlier Staw (in press) experiment in several important respects. First, it would appear necessary to know whether the escalation of commitment is a transitory phenomenon or if it is capable of persisting over many points in time. When negative consequences result from an initial investment decision and then additional resources are committed to the same course of action, will further negative consequences cause a sudden reversal in policy or an additional escalation of commitment? In a similar vein, it is desirable to know if commitment to a losing alternative can be built-up over time even though a decision-maker may not have been personally responsible for the original course of action which led to adverse consequences. Finally, it is important to know if the efficacy of resources committed to a course of action will effect the process of escalation or withdrawal. Does it make a difference if it is highly probable that the commitment of new resources will turn an unfavorable situation around (i.e. high efficacy) or if it is highly uncertain that new resources will improve investment returns (i.e. low efficacy)? The answers to these questions are of substantial social relevance as well as theoretical interest in understanding the determinants of escalation in investment decision contexts.

The present study consists of a 2x2x3 factorial design. The independent variables are personal responsibility, efficacy of resources, and time. Commitment to a course of action comprises the dependent variable. This design allows for a replication of the effect of personal responsibility previously found by Staw (in press), and provides a test for the effect of efficacy upon the commitment of resources. In addition, the design permits examination of the escalation process over three successive decision points. It is thus possible to examine the main effect of time as well as the interaction of time with other factors upon the commitment of resources to a previously chosen course of action.

Method

Subjects

The subjects of this experiment were 96 undergraduate students enrolled in the College of Commerce and Business Administration at the University of Illinois, Urbana-Champaign. There were an equal number of males and females selected for the study as a whole and an equal number assigned to each experimental condition.

As in the previous Staw (in press) experiment, subjects were asked to work on a "Financial Decision Case" in which it was necessary to play the role of a corporate executive in making some decisions about the allocation of research and development funds. Subjects were told that the purpose of the study was to investigate the effects of various amounts of information upon financial decision-making, and that they would be asked to make at least three financial decisions. In addition, subjects were told that, although the particular case on which they would be working contained only a limited amount of information, the information provided should still be sufficient to make a "good financial decision". Since subjects in the experiment were students in a business school, they were generally experienced in working on written cases in which a behavioral or financial scenario is presented and some action or set of actions is called for by the participant.

The Financial Decision Case

The financial decision case used in this study describes a hypothetical corporation (The Adams & Smith Company) in the year 1971. The case presents a scenario in which the subject is asked to play a major role in financial decision-making, and data on corporate sales and earnings are presented for the years 1960 to 1970 (see data in Table 1). As stated in the case, the profitability of the Adams & Smith Company, a large technologically-oriented firm, has been

declining over recent years, and the directors of the company have agreed that one of the major reasons for the decline in corporate earnings (and a deterioration in competitive position) lay in some aspect of the firm's program of research and development. The case further states that the company's directors have concluded that 10 million dollars of additional R&D funds should be made available to its major operating divisions, but, for the time being, the extra funding should be invested in only one of the corporation's two largest divisions. At this point, the case diverges for subjects assigned to the experimental conditions of high and low personal responsibility.

Insert Table 1 about here

Responsibility Conditions

In the high responsibility condition, subjects were asked to act in the role of Financial Vice President in determining which of the two corporate divisions, Consumer Products or Industrial Products, should receive additional R&D funding for the years 1971-73. A brief description of each corporate division was included in the case material, and subjects were asked to make the dichotomous investment decision on the basis of the potential benefit that R&D funding would have upon future earnings of the company. After selecting one of the two corporate divisions and writing a brief paragraph defending the choice, subjects turned this first section of the case in to the experimenter. Subsequently, subjects in the high responsibility condition were administered a second section of the case which provided information on the financial condition of the company as of 1974, three years following the initial allocation of R&D funds. The second section of the case stated that the R&D program of Adams & Smith was again up for reevaluation and funding for the years 1974-1976. In response to requests from both divisions for more money, it was stated that the directors of the company

had created a new general fund of \$20 million for R&D as well as other uses. Thus, the subject, as the Financial Vice President, was asked to allocate an amount from zero to 20 million dollars to the previously chosen division, and from zero to 20 million dollars to be reserved for other uses.

One half of the subjects were also randomly assigned to a low responsibility condition. As in the Staw (in press) experiment, low responsibility subjects were asked to make the second investment decision without having made a prior dichotomous choice as to which corporate division was most deserving of R&D funds. Subjects in this condition received one set of case materials which described the financial condition of the Adams & Smith Company as of 1974, the time of the second R&D funding decision. They were told in the case that the initial R&D funding decision had been made in 1971 by another financial officer of the company, and that the preceding officer had decided to invest all of the R&D funds in the Consumer (or Industrial) Products division.³ The financial results of each corporate decision (e.g. sales and earnings data) were presented from 1960 to 1973, and, like other subjects, persons in the low responsibility condition were asked to make the second R&D funding decision based upon the potential for future earnings. In sum, the information presented to low personal responsibility subjects was identical to that given to other subjects except for the fact that the case's scenario began at a later point in time (1974 rather than 1971) and necessitated making the second investment decision without having participated in an earlier choice. Thus, low responsibility subjects also allocated from zero to 20 million dollars to the division previously chosen (by another financial officer), and from zero to 20 million dollars was reserved for other uses.

The Temporal Ordering of Investment Decisions

As described above, all subjects received the same financial data on the Adams & Smith Company for the years 1960-1973. In addition, all subjects made an R&D investment decision for the 1974-76 time period. Subsequently, each subject was given the financial results of his or her investment decision in terms of (simulated) 1974-76 corporate sales and earnings and was asked to make a new investment decision for the 1977-1979 time period. Finally, subjects were informed of sales and earnings for the 1977-1979 period, and were asked to allocate research and development funds for the 1980-1982 time frame. The temporal ordering of these investment decisions is outlined in Figure 1.

Insert Figure 1 about here

In examining Figure 1 it is important to note that, for each investment decision made by subjects, they were asked to allocate from zero to 20 million dollars to the division which was originally chosen as being most deserving of R&D funding. Thus, subjects in the high responsibility condition were asked to make an initial dichotomous decision as to the relative merits of the Consumer versus Industrial Products division, and then to make three subsequent decisions allocating from zero to 20 million dollars in additional funding to that division. In contrast, subjects in the low responsibility condition made three decisions to allocate additional money to the division initially chosen by another financial officer of the firm. The commitment decision at each point in time consisted of subjects completing the following form:

Sample Case Recommendation Form

As the Financial Vice President in the situation described by the case, you are to determine how much of the additional \$20 million should be allocated to the previously funded division and how much should be allocated

to other uses for fiscal years (1974 through 1976). The decision is to be made on the basis of the potential benefit of the added research funding to the future earnings of the division.

_____ dollars allocated to (Consumer) Products

_____ dollars reserved for other uses

_____ = Total

Please write a brief paragraph defending your decision:

($\frac{1}{2}$ page for paragraph)

Decision Consequences

All subjects, whether they were assigned to the high or low responsibility conditions, received similar sales and earnings data (see Table 1). The results given to subjects for each of the investment decisions displayed no significant upturn in sales (as might be expected to result from increased R&D expenditures) but instead showed a continuation of divisional losses. These data were presented to subjects as being derived from a sophisticated economic simulation conducted by experts in the financial field.⁴ To assure credibility, the experimenter, upon receipt of each of the subject's investment decisions, looked up the corresponding earnings and sales figures from a complex and detailed chart which was described to subjects at the start of the experiment as containing the simulated results of various R&D allocation decisions.

Efficacy of Resources Manipulation

In addition to two levels of personal responsibility, subjects were also randomly assigned to conditions of high and low resource efficacy. This manipulation occurred in the first part of the experiment and consisted of providing additional data and description of the Consumer and Industrial Products divisions of the firm. The manipulation informed subjects that there was either a high or low likelihood that additional R&D funding would help the financial condition of the Adams & Smith Company. Efficacy of resources was experimentally manipulated by informing subjects (in the case) that an outside consultant had performed an extensive review of the corporate divisions, and that his report reflected either uncertainty or praise of the divisional management. In the low efficacy condition, the subject was informed that both divisions possessed "inconsistent planning and project selection groups," and that it was "uncertain whether the management teams for both the Consumer and Industrial Products divisions could effectively administer additional research and development funds." In the high efficacy condition, subjects were informed that both divisions had a "high quality planning and project selection group," and that "it was highly likely that the management teams for both Consumer and Industrial Products could effectively administer additional R&D funds." Before making their first investment decisions, subjects were also provided with a table showing the percentage of projects judged to be successful for the two divisions over a fifteen year period (see Table 2). In the high efficacy condition, these data showed that the R&D project success rate recently reached a new high of 77%, while in the low efficacy condition the data reached a new low of 28%.

Insert Table 2 about here

Overall Design

As described, the overall design of the experiment consisted of a 2x2x3 factorial with personal responsibility, efficacy, and time as the independent variables. As displayed in Figure 1, all subjects participated in at least three investment decisions. The dependent variable of interest was the amount of money allocated to the initially chosen alternative at Time 1 (1974 decision), Time 2 (1977 decision), and Time 3 (1980 decision). Regardless of the experimental condition to which subjects were assigned, each was informed that the financial condition of Adams & Smith continued to worsen. Thus, unlike the previous Staw (in press) experiment, all subjects were run under negative decision consequences.

Results

Preliminary Analysis

A preliminary analysis was conducted to test whether the object of a subject's prior choice, be it Consumer or Industrial Products, affected subsequent investment decisions. For subjects in the high responsibility condition, there was no difference in subsequent investment behavior between persons who initially selected Consumer or Industrial Products as the best alternative. Therefore, these subgroups were combined in further analyses. For subjects in the low responsibility condition (who were told that another financial officer had previously chosen Consumer or Industrial Products as the best alternative) differences were also checked. For low responsibility subjects, the initially chosen alternative was randomly assigned rather than self-selected. As expected, there were no differences in subsequent investment behavior between subjects told that another financial officer had selected Consumer Products or Industrial Products, and, thus, these subgroups were also combined in further data analyses.

Immediate Effects

In order to examine the immediate effects of Responsibility and Efficacy, a 2x2 analysis of variance was conducted using Time 1, or 1974 decision data (see Table 3). The purpose of this analysis was to measure the immediate effects of the experimental treatments and to provide a test for the replication of previous data. In the Staw (in press) study, there was a significant main effect of personal responsibility upon the commitment of resources to a previously chosen course of action. After experiencing negative feedback on an initial investment choice, subjects in the Staw (in press) study allocated an average of \$12.97 million under the condition of high responsibility and \$9.43 million under low responsibility. In the present experiment, there was also a significant main effect of personal responsibility ($F=9.40$, $d.f.=1/92$, $p<.003$). Subjects allocated an average of \$11.99 million to the previously chosen alternative under high responsibility and \$8.58 million under low responsibility. Thus, the two studies were quite consistent in their findings.

Using the Time 1 (1974 decision) data, there was also an immediate effect of efficacy of resources upon investment in the previously chosen alternative. Under high efficacy, subjects invested an average of \$11.53 million, while only \$9.04 million was invested under the low efficacy condition. The main effect of efficacy upon Time 1 investment behavior was statistically significant ($F=5.02$, $d.f.=1/92$, $p<.03$).

Insert Table 3 about here

Effects Over Time

Table 4 presents the amount of money subjects allocated over three time periods to the initially chosen alternative. A 2x2x3 analysis of variance summary for Responsibility, Efficacy, and Time is presented in Table 5.

The summary shows a main effect of Time and also significant interactions of Responsibility by Time and Efficacy by Time. For the main effect of Time, Newman-Keuls mean comparisons (Winer, 1971) revealed a significant overall decrement ($p < .01$) in dollars invested from Time 1 (mean=10.29) to Time 2 (mean=7.17). However, at Time 3 the amount invested (mean=8.97) was greater than at Time 2 and the increase between Time 2 and Time 3 was statistically significant ($p < .05$).

Insert Table 4 and Table 5 about here

Figure 2 presents the effect of Responsibility as a function of Time. Simple main effects of Time were computed for both low and high responsibility subjects. Although there were no differences across the three points in time for low responsibility subjects, the effect of Time for high responsibility subjects was significant ($F=11.74$, $d.f.=2/184$, $p < .001$). For high responsibility subjects, Newman-Keuls mean comparisons showed a significant ($p < .01$) decrement in dollars invested between Time 1 and Time 2 and a significant increase ($p < .05$) in dollars invested from Time 2 to Time 3. However, it should be noted that, even with the increase, the amount of money invested at Time 3 was still significantly less than the money invested at Time 1 ($p < .01$).

Insert Figure 2 about here

Figure 3 presents the effect of Efficacy as a function of Time. For subjects in the low efficacy condition, simple main effects of Time indicated that there were no differences among investment decisions for Time 1, Time 2, and Time 3. In contrast, the simple main effect of Time for high efficacy subjects was significant ($F=9.46$, $d.f.=2/184$, $p < .01$). Newman-Keuls mean comparisons indicated that subjects invested more money at Time 1 than at Time 2 or at Time 3 ($p < .01$). The increase from Time 2 to Time 3 was not statistically significant.

Insert Figure 3 about here

The similarity of the Responsibility by Time interaction in Figure 2 and the Efficacy by Time interaction in Figure 3 is noteworthy. Low responsibility and low efficacy subjects both tended to make stable or slightly increased investments over time. In contrast, high responsibility and high efficacy subjects both tended to invest more at Time 1 than at Times 2 and 3. Moreover, subjects in the high responsibility and efficacy conditions both tended to increase the level of their investment from Time 2 to Time 3, although this increase was not always statistically significant.

Analysis of Sex Effects

In addition to the primary analyses, a 2x2x2x3 analysis of variance of Responsibility, Efficacy, Sex, and Time was performed to determine whether a person's sex influenced the amount of money invested in the initially chosen alternative. The analysis revealed the same results as the primary analyses except that the Sex factor also interacted with Responsibility and Time ($F=3.27$, $d.f.=2/176$, $p<.05$). Inspection of the means indicated that the investments of males and females were very similar under high responsibility conditions. Males and females also made similar investments under low responsibility conditions with the exception that females tended to invest more at Time 2 than males.

Discussion

The primary purpose of this experiment was to examine the persistence of the escalation process over time. Staw (in press) had shown that an individual may become especially committed to a course of action when he has been responsible for negative consequences. However, the design of that experiment involved

only two investment decisions--one to commit the subject on a course of action and a second with which to measure an increase in commitment following negative consequences. Thus, the Staw (in press) data do not cast light on the temporal nature of the escalation process.

In the present study, data for high responsibility subjects showed that commitment to a course of action was greatest immediately following the receipt of negative consequences. As shown in Figure 2, the Time 1 decision data closely replicated the main effect of responsibility found by Staw. However, it can also be seen from Figure 2 that the commitment of resources dropped markedly from the first to the second investment decision, and then rebounded only slightly on the third decision trial. Thus, investment decisions for high responsibility subjects were highly unstable, while resources committed by low responsibility subjects changed little over time.

The data of the present experiment also showed an immediate effect of efficacy of resources upon investment decisions. When subjects were given information that the success rate of R&D projects was high they invested more money than when they were told that the success rate was low. However, like the responsibility effect, the investment decisions of persons in the high efficacy condition were unstable. As shown in Figure 3, the pattern of the data for high and low efficacy conditions closely resembled that of high and low responsibility conditions.

In interpreting the results, it is interesting to observe the pattern of means displayed in Table 4. In three of the four experimental conditions the greatest amount of money was invested on the first decision, the least amount on the second, while an intermediate amount was invested on the third decision trial. What seemed to have occurred, and this effect was most pronounced in the high responsibility-high efficacy condition, was the following: after

receiving negative feedback on the initial investment of R&D in Consumer or Industrial Products, subjects greatly escalated the commitment of resources to the previously chosen course of action. However, upon receiving additional negative consequences, subjects tended to withhold new investment or keep it at a lower level. Finally, after receiving further negative results, investment was again increased. 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.

Implications

Research on the escalation process is at a preliminary stage. The results of the present study confirm the earlier data (Staw, in press) that escalation is likely to occur when individuals are responsible for negative consequences. However, the present findings show that the effects over time can be quite complex. Repeated negative consequences can lead to a sequence of escalation, discouragement and withdrawal, and then reescalation.

It is tempting to draw analogies from the present line of research to cases of escalation in everyday life. For example, U.S. participation in the Indochina War followed a period of escalation, withdrawal, and an attempt to reescalate (recently blocked by Congress). However, it is far too early to posit that any experimentally-based data can so neatly parallel real world conditions. At best, efforts can be made to capture some of the more important elements of the escalation process. Responsibility or original participation in the formulation of a course of action clearly seems to be an important variable and one which should continue to be central in future research.

The efficacy of resources, or how likely additional investment will yield positive returns, also seems to be a relevant factor. Escalation may result from an unrealistically high estimation of the capabilities of one's material resources as well as personal involvement in determining a prior course of action

Future Research

Future research on escalation should be extended upon three lines. First, new experiments should be conducted which examine the effects of additional independent variables upon the escalation of commitment. Specific factors worthy of study may be the amount of loss incurred by a decision-maker (see Weick, 1974, for discussion of the "Vietnam Dollar" phenomenon), the nature of the decision-making entity (e.g. individual decision-maker versus a decision-making group), perceptual attribution of characteristics following decision consequences (see Staw, 1975), personality characteristics of the decision-maker (e.g. self-esteem, tolerance for ambiguity), and the evaluative consequences of the situation (see Rosenberg, 1969, for a relevant discussion of evaluation apprehension).

Secondly, research should attempt to examine escalation processes within several decision contexts. Both the Staw (in press) study and the present experiment utilized a simulated R&D decision context. Additional research should focus upon escalation in (simulated or real) public service programs, military situations, and even the stock market. Each of these situations contains the same basic features of the investment decision context--initial choice of a course of action and opportunity for subsequent escalation or withdrawal.

Finally, considerable research effort should be placed into developing a normative model of escalation. During the 1960's it was commonly believed in the U.S. that programs of sufficient size and scope could solve most important problems, be they social or military. However, in recent years, many policy-makers have become

skeptical of escalation as a tactic for reversing an adverse situation. The comments of Edmund (Jerry) Brown, the current Governor of California, may be representative of this change in sentiment.

The fact that there's a problem doesn't mean that more government will make it better. It might make it worse. The interventionism that we've seen in our society is analogous to Vietnam. . . .When problems don't go away, we escalate the attack until somebody gives up. I'm rethinking some of that escalatory social interventionism. Inaction may be the highest form of action. (From an interview with correspondent Jess Cook, Time, 1975.)

Future research should specifically examine the relationship of escalation to measures of effectiveness. It has been posited by Simon (1974, personal communication) that individuals who are prone to escalate following negative consequences may actually make poor business and public executives. This proposition is certainly testable, given a reliable measure of escalatory tendencies.

In conclusion, it seems that the relationship between escalation and effectiveness would depend primarily upon the forces operating in a given situation or the relevant "state of nature". Sometimes, increased allocation of resources and resolute faith in a course of action may be rewarded by success, and at other times it may lead to even greater losses. What should be related to effective decision-making, then, is the ability to assess a current situation or to perceive future trends--not a consistent tendency to escalate or withdraw resources in investment decision contexts. Any consistent individual tendency to escalate or withdraw following the receipt of negative consequences would most likely be quite dysfunctional over the long-run. Thus, individual mechanisms which serve as linear determinants of escalation (e.g. self-justification) or group tendencies to choose escalatory tactics (e.g. via a risky-shift effect) could in general be negatively related to effective decision-making. These hypotheses are obviously speculative and call for considerable empirical research.

Footnotes

1. The authors wish to thank Paul S. Goodman and Herbert A. Simon for an initial discussion of ideas which led to this paper; Greg R. Oldham, Louis R. Pondy, and Gerald R. Salancik for their comments on an earlier draft of this manuscript; and The Center for Advanced Study at the University of Illinois, Urbana-Champaign for the facilities necessary to complete the research.
2. The only other existing research on escalation deals with the escalation of conflict within interpersonal and intergroup contexts. In these studies, escalation refers to a heightening of tension or harm-doing rather than an investment of resources to a particular course of action.
3. In both this study and the Staw (in press) experiment, subjects were told (in the case) that the previous financial vice-president had suddenly died of a heart attack. This explanation was provided so that the departure from office of the previous vice-president would not be associated with the failure of past policy decisions.
4. The data combination of relatively constant sales with decreasing earnings was chosen for the years 1971-1979 so as to provide a situation with high external validity (Campbell, 1957). Within an inflationary economy (e.g. 1970's), relatively constant or slightly increasing sales actually represent a real decline in revenue, and are commonly associated with decreasing earnings or increased losses.

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Divisional Contributions to Sales and Earnings
of Adams & Smith Company

Fiscal Year ^a	Consumer Products		Industrial Products	
	Sales ^b	Earnings ^b	Sales ^b	Earnings ^b
1960	624	14.42	670	15.31
1961	626	10.27	663	10.92
1962	649	8.65	689	11.06
1963	681	8.46	711	10.44
1964	674	4.19	724	9.04
1965	702	5.35	735	6.38
1966	717	3.92	748	5.42
1967	741	4.66	756	3.09
1968	765	2.48	784	3.26
1969	770	(.12) ^c	788	(.81) ^c
1970	768	(.64) ^c	791	(.83) ^c

January, 1971: Dichotomous Investment Decision--allocation of R&D to Consumer versus Industrial Products

1971-1973 ^d	770	(.74)	794	(.95)
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January, 1974: Allocation of 0 to 20 million dollars additional R&D to Initially Chosen Alternative

1974-1976 ^d	773	(.85)	796	(1.09)
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January, 1977: Allocation of 0 to 20 Million dollars additional R&D to Initially Chosen Alternative

1977-1979 ^d	775	(.98)	799	(1.25)
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January, 1980: Allocation of 0 to 20 million dollars additional R&D to Initially Chosen Alternative

^a fiscal year ending December 31
^b in millions of dollars
^c parentheses denote net losses in earnings
^d average sales and earnings for three-year period

Table 2
 Percentage of Projects Judged Successful
 in High and Low Efficacy Conditions

Experimental Condition	Fiscal Year	Percent Successful Projects
High Efficacy	1955-1959	73%
	1960-1964	74%
	1965-1969	77%
Low Efficacy	1955-1959	44%
	1960-1964	37%
	1965-1969	28%

Table 3
 Analysis of Variance Summary for
 Time 1 (1974) Decision Data

Source	df	MS	F
Responsibility	1	278.46	9.40**
Efficacy	1	148.75	5.02*
Responsibility X Efficacy	1	11.00	.37
Error	92	29.63	

**p< .003

*p<.03

Table 4
 Mean Investment in Previously Chosen Alternative
 by Responsibility, Efficacy, and Time

		Time 1	Time 2	Time 3
High Responsibility	High Efficacy	12.90 (n=24)	4.79 (n=24)	7.21 (n=24)
	Low Efficacy	11.08 (n=24)	7.25 (n=24)	9.19 (n=24)
Low Responsibility	High Efficacy	10.17 (n=24)	7.83 (n=24)	8.08 (n=24)
	Low Efficacy	7.00 (n=24)	8.79 (n=24)	11.42 (n=24)

Table 5
 Analysis of Variance Summary for
 Responsibility and Efficacy over Time

Source	df	MS	F
<u>Between Subjects</u>	<u>95</u>		
Responsibility	1	1.53	.03
Efficacy	1	28.13	.62
Responsibility X Efficacy	1	4.50	.10
Error (Subj. w. groups)	92	45.04	
<u>Within Subjects</u>	<u>192</u>		
Time	2	235.55	6.31**
Responsibility X Time	2	230.39	6.17**
Efficacy X Time	2	180.00	4.82*
Responsibility X Efficacy X Time	2	15.51	.42
Error (Time X Subj. w. groups)	184	37.32	

**p<.003

*p<.01

Figure Captions

Figure 1: Temporal ordering of investment decisions and feedback on results for subjects in high and low responsibility conditions.

Figure 2: Interaction of Responsibility and Time.

Figure 3: Interaction of Efficacy and Time.

High Responsibility Subjects
Started Case Here

Low Responsibility Subjects
Started Case Here

Presentation of
Financial
History of Company
1960-1970 data

January, 1971
Dichotomous
Investment
Decision:
Allocation of
R&D to Consumer
vs. Industrial
Products

Presentation
of Results
for
1971-1973

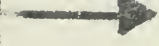
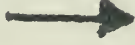
January, 1974
Allocation of 0 to 20
million dollars R&D to
Initially Chosen
Alternative

January, 1980
Allocation of 0 to 20
million dollars R&D to
Initially Chosen
Alternative

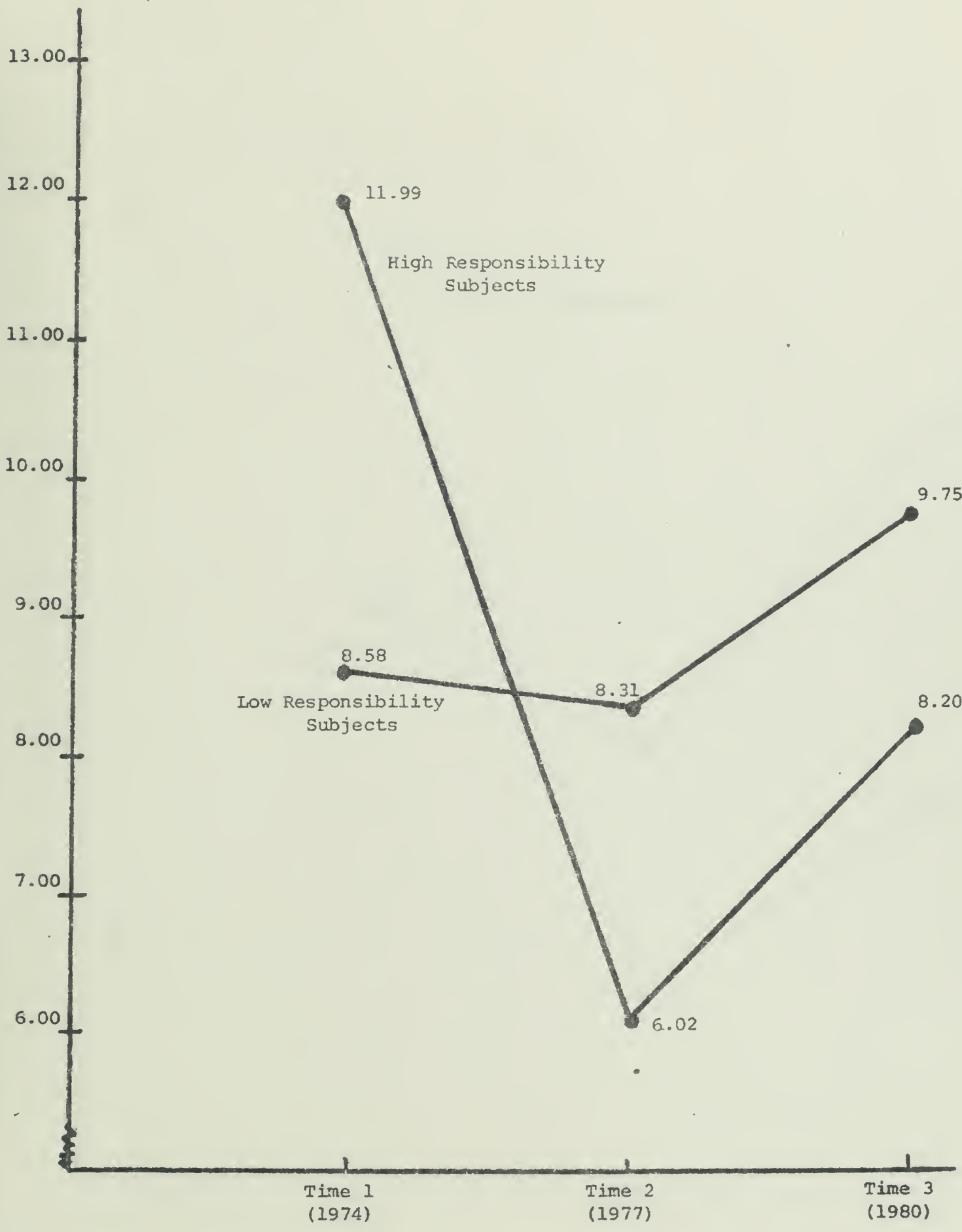
Presentation
of Results
for
1977-1979

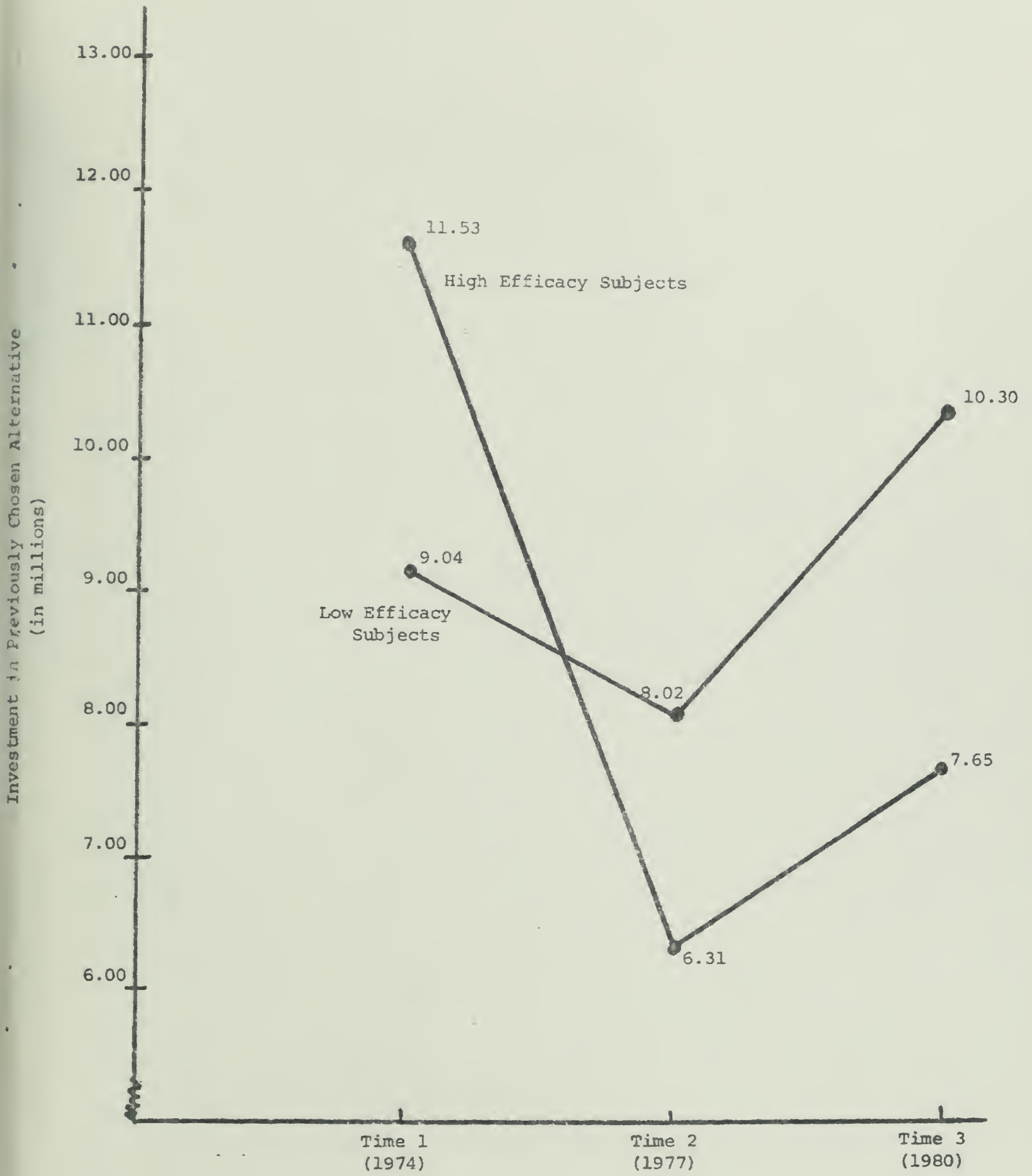
January, 1977
Allocation of 0 to 20
million dollars R&D to
Initially Chosen
Alternative

Presentation
of Results
for
1974-1976

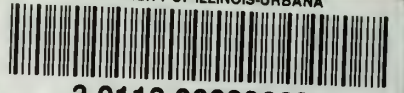


Investment in Previously Chosen Alternative
(in millions)





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