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Desire for Control and Achievement-Related Behaviors

Jerry M. Burger
University of Santa Clara

A model is presented that describes the relation between individual differences in the general desire to control events and performance in achievement-related tasks. Six experiments were conducted with a college-student population to examine various steps in this model. Subjects high in the desire for control displayed higher levels of aspiration, had higher expectancies for their performances, and were able to set their expectancies in a more realistic manner than were subjects low in the desire for control. Subjects high in desire for control were also found to respond to a challenging task with more effort and to persist longer at a difficult task than were subjects low in desire for control. Finally, a pattern of attributions for success and failure was uncovered for subjects high in desire for control that has been associated with high achievement levels.

The construct of personal control has generated a considerable amount of research recently (cf. Baum & Singer, 1980; Garber & Seligman, 1980; Lefcourt, 1981, 1982; Perlmuter & Monty, 1979). The prediction of, motivation for, and reaction to the loss of personal control has been tied to numerous social–psychological phenomena. These include depression (Abramson, Seligman, & Teasdale, 1978), academic performance (Dweck & Licht, 1980), health (Wallston & Wallston, 1981), pain tolerance (Thompson, 1981), crowding (Schmidt & Keating, 1979), and adjustment among the elderly (Schulz, 1980).

A natural extension of this research has been the examination of individual differences in the motivation to obtain control or to be in control of a situation. In this vein, Burger and Cooper (1979) introduced the notion of *desire for control,* a stable personality trait reflecting the extent to which individuals generally are motivated to control the events in their lives. Persons high in desire for control are said to prefer making their own decisions, taking action to avoid a potential loss of control, and assuming leadership roles in group settings. Persons low in desire for control are motivated to avoid extra responsibilities and may prefer that someone else make decisions for them.

To examine this individual difference, Burger and Cooper (1979) designed the Desirability of Control (DC) Scale. The DC scale has been found to have reasonable psychometric properties, is only slightly correlated with measures of locus of control, and is relatively independent of social desirability (Burger, 1984; Burger & Cooper, 1979; Smith, Wallston, Wallston, Forsberg, & King, 1984). Working with the scale, researchers have found that DC scores can account for significant proportions of variance in a wide variety of areas. These include learned helplessness (Burger & Arkin, 1980), gambling (Burger & Cooper, 1979; Burger & Schnerring, 1982), choice of a place to die (Smith et al., 1984), intrinsic motivation (Burger, 1980), attitude change (Burger & Vartabedian, 1980), depression (Burger, 1984), perceptions of crowding (Burger, Oakman, & Bullard, 1983), and type of photographs taken (Henry & Solano, 1983).

The present series of experiments is designed to examine the role of individual differences in the desire for control in achievement-related behaviors. Research on achievement motivation and achievement-related behavior extends from classic early works (e.g., Atkinson, 1964; McClelland, 1961) to recent interest in more complex models and in a variety of related variables

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Requests for reprints should be sent to Jerry M. Burger, Department of Psychology, University of Santa Clara, Santa Clara, California 95053.

	Aspiration Level	Response to Challenge	Persistence	Attributions for Success & Failure
Theoretical Relationship with High DC as Compared with Low DC	Select harder tasks; Set goals more realistically	React with greater effort	Work at difficult task longer	More likely to attribute success to self and failure to unstable source
High-DC Benefit	Higher goals are achieved	Difficult tasks are completed	Difficult tasks are completed	Motivation level remains high
High-DC Liability	May attempt goals too difficult	May develop performance-inhibiting reactions	May invest too much effort	May develop an illusion of control

Figure 1. Four-step model for the relation between desire for control and performance on achievement-related behaviors.

(e.g., Spence & Helmreich, 1983; Thomas, 1983). The present series of studies represents an initial effort to examine how individuals high and low in desire for control differ in their behavior at several steps along an achievement–behavior sequence.

I propose that individuals high in the desire for control will display many of the behaviors that are related to higher achievement. More specifically, desire for control will have a significant influence on this behavior at four different steps in the task sequence. The steps in this sequence are illustrated in Figure 1. First, persons high in desire for control should have higher levels of aspiration for their performances than do persons low in desire for control. In addition, these individuals should select aspiration levels that more realistically reflect their potentials. These predictions follow from the conception of an achievement task as a challenge to the individual's perception of personal control. Success at the task demonstrates one's ability to control such situations and one's mastery generally. On the other hand, failure to conquer the task may be interpreted as a threat to one's perceived ability to control significant segments of the environment. Thus, persons high in the desire for control should be highly motivated to perform well on a challenging task, and this should be manifested in high levels of aspirations. However, unrealistically high aspirations can result in the unwanted failure experience. Therefore, persons high in desire for control should have learned to realistically set their aspirations in a manner that maximizes their perception of achievement.

The second step in the model concerns the individual's response to a challenge. Many real-world tasks in achievement settings are filled with unexpected difficulties. I hypothesize that persons high in desire for control will respond to these difficulties as challenges to their control over the task. Thus, the reactance effect (Brehm, 1966) of exerting greater effort when one meets such a challenge should be found more often among those high, rather than low, in the desire for control.

Similarly, persons high in desire for control should be more persistent in their efforts to complete a difficult task—the third step in the sequence. Because they are highly motivated to avoid failure, and thus to avoid the perception of a lack of control, persons high in the desire for control should work at a difficult task for a longer time before giving up or seeking help than do persons low in the desire for control.

Finally, individuals high in desire for control should attribute the causes of their performances in a manner that increases motivation on subsequent tasks. Research by Weiner et al. (1971) demonstrated that high achievement is associated with giving oneself credit for successes (e.g., high ability, high effort) and attributing failure to a lack of effort or to luck. These attributions are said to influence how the person approaches and works on future tasks; this pattern leads to higher motivation and thus more achievement. I propose that persons high in desire for control are motivated to perceive themselves as responsible for their successes and thereby satisfy their motives to feel personally in control of the situation. In addition, a high desire for control should lead these same

individuals to deny any inability to control the situation (i.e., failure) and, therefore, to attribute such instances to unstable sources.

Although it is intuitively appealing on the surface, this four-step model would be overly simplistic in describing the relation between desire for control and performance on achievement-type tasks. Although the hypotheses all point to the superiority of the person high in the desire for control over the individual low in desire for control, this is certainly not always the case. At each step of the model it is possible that a high desire for control also can become a liability. A high level of aspiration, for example, may lead to the person's attempting tasks that are too difficult to be accomplished. The person high in desire for control also might be more likely to take on too many tasks, thus inhibiting his or her ability to perform well on any of them.

Similarly, although persons high in desire for control may react to challenges with increased effort, at some point the inability to control the situation may cause them to develop performance-inhibiting reactions. Wortman and Brehm (1975) proposed that those individuals who react most strongly to a threat to perceived control are most likely to suffer helplessness reactions if the situation remains uncontrollable. Consistent with the Wortman and Brehm model, Burger and Arkin (1980) found that persons high in the desire for control exhibited more helplessness behavior and reported higher levels of depression following a learned helplessness manipulation than did subjects low in desire for control. Similarly, Burger (1984) found that persons high in the desire for control who generally perceived that they did not have control over the events in their lives were more likely to exhibit some depressive symptoms than were persons low in desire for control. Thus, although the tendency to react to a challenge with greater effort may be desirable for some tasks, it also may hold some serious pitfalls.

Whereas persistence on a task can often lead to the solving of a difficult problem, it also can lead to an inefficient investment of time and effort if the task eventually proves to be too difficult. Finally, although attributions to oneself for success may lead to higher levels of motivation on later tasks, this tendency also can become a liability. Not recognizing when one's successes are caused by external forces and not accepting responsibility for one's failures may give the individual high in desire for control a false impression of his or her abilities. Persons high in the desire for control mistakenly may attempt to control events over which they have little or no influence. Burger and Cooper (1979) and Burger and Schnerring (1982) found that persons high in desire for control were more susceptible to the illusion of control than were persons low in the desire for control. Under certain gambling situations these subjects tended to place larger bets, indicative of a greater confidence of success, for games that were obviously chance determined than did subjects low in desire for control.

The complete model for the relation between desire for control and achievement-related behavior is presented in Figure 1. As can be seen, a complete understanding of this relation requires that the model be tested at numerous points to determine the circumstances under which different levels of desire for control lead to different types of behaviors and different outcomes. The purpose of the present series of experiments is to test the proposed positive relation between desire for control and behaviors associated with high levels of achievement at each of the four steps in the model. Limiting conditions and the influence of other variables on these relations need to be examined in later research.

Experiment 1

I propose that desire for control is positively related to level of aspiration on an achievement-type task. Persons high in the desire for control should be more likely to select tasks that provide a challenge than should persons low in desire for control. In this way the completion of the task can provide a sense of mastery and control. Although the selection of a relatively easy task might ensure success, such an accomplishment would provide little satisfaction for the person who is motivated to perceive himself or herself as in control. On the other hand, persons low in the desire for control are not as strongly motivated to

sense control through achievements, and therefore may be satisfied to accomplish the necessary work with a minimal chance of failure. These persons low in desire for control may be expected to select a task that allows for completion, even though it may not provide much in the way of perceived control. It was predicted that when given a choice of tasks of different difficulty, persons high in the desire for control would tend to select tasks that are more difficult than would persons low in the desire for control.

Method

Subjects. Thirty-four male and female undergraduates served as subjects in exchange for class credit. All had taken the Desirability of Control Scale (Burger & Cooper, 1979) approximately 4 weeks earlier as part of a large test battery. No connection was made between the experiment and the DC scale at the time of the experiment, a procedure that was followed in Studies 2–5, as well.

Instrument. The DC scale is a 20-item inventory that asks subjects to indicate on 7-point scales the extent to which they agree or disagree with statements concerned with issues of control (e.g., "I prefer a job where I have a lot of control over what I do and when I do it," "I wish I could push many of life's decisions off on someone else"). Scores range from 20 to 140, with higher scores indicating a higher desire for control. Means with college student samples have consistently averaged between 100 and 105.

Procedure. Subjects participated in the experiment in groups. They were told that the experimenter was interested in examining verbal abilities. Subjects were informed that they would be working on a series of anagram tasks. It was explained that the presentation of the anagrams would be in two parts. During the first part each subject received a test booklet containing four sets of 10 anagrams, one set per page. The experimenter explained what anagrams were and gave an example. Subjects then were given 2 min each to solve the four sets of 10 anagrams, with the experimenter starting and stopping subjects for each set. All anagrams consisted of four letters and were designed to be only mildly difficult.

Subjects then were instructed to turn to the last page of the booklet. On this page, subjects found the instructions for selecting the level of difficulty for the anagrams they would work on during the second part of the experiment. It was explained that the subject would work on three more sets of 10 anagrams. The subject was to indicate which three of the possible nine sets he or she wished to work on and in what order they were to be given. It was explained that the sets had been normed with a large number of college students and that each set was identified on the sheet with a difficulty rating. The degree of difficulty for each set was indicated by the percentage of subjects in the normed group who supposedly were unable to solve all 10 anagrams. The nine sets ranged from anagrams in which 90% of the normed group had been unable to solve all of the problems to a set in which only 10% had been unable to complete all of the anagrams. The remaining sets were presented in 10% increments. Thus, each of the three choices made by the subjects could be assigned a value from 1 to 9 for the degree of perceived difficulty. Subjects were told they could select each of the sets only once.

Following these choices, subjects were informed that there would be no more anagram problems. The subjects were debriefed and dismissed.

Results and Discussion

Subjects were divided into high- and low-desire-for-control (DC) halves via a median-split method. First, each group was compared for performance on the anagram task. The total number of solved anagrams on the four sets (40 total anagrams) was calculated for each subject. As can be seen in Table 1, no significant difference was found between high- and low-DC subjects in terms of performance on the anagram task.

Next, subjects' aspirations were assessed in two ways. First, the anagram set that the subject desired to work on first was examined. Next, the three choices of anagram set were summed for an overall aspiration score. As can be seen in Table 1, significant differences between high- and low-DC subjects emerged on both of these measures. High-DC subjects chose an anagram set for their first choice that was significantly more difficult than the set chosen by low-DC subjects, $F(1, 32) = 5.34$, $p < .03$. In addition, the overall aspiration score for high-DC subjects was higher—indicating a choice of more difficult anagrams—than was the score for the low-DC subjects, $F(1, 32) = 5.30$, $p < .03$.

The results of Experiment 1, therefore, provide support for the first step in the desire-for-control–achievement-behavior model proposed here. Although high- and low-DC subjects performed equally well on the sample anagrams, the high-DC subjects preferred to work on tasks that they believed to be of greater difficulty than did the low-DC subjects. In actual achievement situations, high-DC persons can be expected to attempt jobs or to take classes that are perceived to be difficult more readily than will low-DC persons. This is consistent with the conception that the high-DC individual finds satisfaction in displaying mastery over tasks that he or she finds challenging.

Table 1
Mean Correct Anagrams and Choices by High- and Low-DC Subjects

Variable	Subjects	
	High-DC	Low-DC
Number correct	35.30	35.41
First choice	6.12	4.29
Total choice	19.35	16.23

Note. DC = desire for control.

Experiment 2

If desire for control is related to level of aspiration in an achievement-related task, then one would expect that higher DC scores would be related to higher expectancies of success on the task. In addition, it has been proposed that higher levels of desire for control will be associated with more realistic expectancies and aspirations. High-DC people should not aspire to levels too high to meet and thus exclude a feeling of accomplishment. In addition, because high-DC individuals are motivated to perform well, they may pay closer attention to performance feedback and adjust their aspirations accordingly more than do low-DC persons. Experiment 2 compared expectation levels of high- and low-DC subjects. It was predicted that high-DC subjects would give higher and more accurate estimates for their performances than would low-DC persons.

Method

Subjects. Eighty-five male and female undergraduates served as subjects in exchange for class credit. All had taken the DC scale several weeks earlier as part of a large test battery.

Procedure. The procedure was similar to that used in an experiment by Snow (1978). It was explained to subjects that they would be working on a series of connect-the-numbers puzzles to assess their perceptual and motor skills. Subjects received a booklet containing the puzzles. It was explained to subjects that each puzzle consisted of the numbers 1–50, scattered randomly around the 8½ × 11-in. (21.8 × 28-cm) page. Their job was to begin with the number *1* and connect the numbers sequentially as rapidly as possible. Subjects were informed that they had 20 s to work on each puzzle.

On the first page of the booklet, subjects were asked to indicate how many numbers they thought they would be able to connect within the 20-s time period for the first puzzle. The experimenter then started and stopped subjects on each of the six puzzles in the booklet. After completing each puzzle, subjects were instructed to indicate on the spaces provided at the bottom of the page how many numbers they had connected on that puzzle and to estimate how many they would connect on the next puzzle.

Results and Discussion

Three different measures were created from the subjects' responses. Each of these was then correlated with the DC score. First, there was a significant correlation between DC score and the estimate subjects made for the first puzzle ($r = .31$, $p < .01$). The higher the DC score, the higher the subject tended to estimate his or her performance on the unseen task. Next, the six estimates for the puzzles were summed for an overall aspiration measure. Once again, this score was positively correlated with the DC score ($r = .28$, $p < .01$), indicating higher overall aspiration levels for those with higher DC scores. Finally, a measure of subject accuracy of estimation was calculated. For each puzzle the completed number was subtracted from the estimate for that puzzle. The absolute values of each of these figures were then summed for an accuracy index. This accuracy score correlated negatively with the DC score ($r = -.38$, $p < .001$). Thus, higher DC scores were associated with smaller differences between the estimate for a puzzle and the actual performance on the puzzle.

The results of Experiment 2 provide additional support for the first step in the proposed model. On both the initial puzzle and the puzzles taken together, high-DC subjects tended to make higher estimates of their performance than did low-DC subjects. These estimates can be interpreted as another demonstration of the higher levels of aspiration proposed for high-DC persons. In addition, high-DC persons tended to be more accurate in their estimates of their performances. This finding is consistent with the description of the high-DC person as one who is highly motivated to demonstrate his or her mastery. These subjects set their aspirations on a level where they were more likely than were low-DC subjects to attain the goal and, thus, to establish their competence.

Experiment 3

The second stage of the model proposes that persons high in the desire for control

will respond to a challenging task with greater effort than will low-DC individuals. A task that becomes more difficult than was originally anticipated should be perceived by the high-DC individuals as a threat to their control over the task. These individuals should then respond with greater effort to overcome the challenge than should low-DC persons. In research on a related construct, Fazio, Cooper, Dayson, and Johnson (1981) found that Type A college students worked harder on a proofreading task when the task was made challenging than when the task was a relatively simple one. Type B persons showed the opposite effect. Glass (1977) suggested that the primary distinction between Type A and Type B persons is a higher level of motivation to control the environment by the Type A individual. Indeed, Musante, MacDougall, Dembroski, and Van Horn (1983) found that DC scale scores were significantly correlated with various measures of Type A–Type B. Because of this proposed similarity between the Type A–Type B construct and the DC construct, both were examined in the experiment.

A procedure similar to that used by Fazio et al. (1981) was employed. Subjects worked on a proofreading task that was either relatively easy or fairly challenging. It was predicted that higher desire-for-control scores would be associated with higher levels of effort on the proofreading task, but only in the challenging condition.

Method

Subjects. Thirty-nine undergraduates participated in the experiment in exchange for class credit. All had taken the DC scale and a measure of Type A–Type B, the student version of the Jenkins Activity Survey (JAS; Glass, 1977), several weeks earlier.

Procedure. Subjects participated in the experiment in groups. Subjects were given a red marking pen and a manuscript filled with errors. They were informed that they would be working on a proofreading task. The experimenter explained that the subject's task was to look for errors in spelling, punctuation, and grammar. Examples of how to indicate and correct errors were given. In the challenge condition, subjects were given two additional tasks to perform. They were instructed to count the number of times the word *the* appeared and also the number of proper nouns that appeared on the lines they were proofreading. Subjects in the no-challenge condition were given the proofreading task only.

All of the subjects were given 10 min to work on the task. At the end of the time, the experimenter stopped the subjects and instructed them to draw a line indicating the last full line of the manuscript that had been proofread. Subjects in the challenge condition were instructed to indicate how many times they had read the word *the* and how many proper nouns they had seen to that point in the manuscript. All subjects then were debriefed.

Results and Discussion

Subject scores for the DC scale and the JAS were significantly correlated ($r = .39$, $p < .02$). Because of this correlation, analysis of the dependent measure, the number of lines attempted, was conducted with multiple regression analyses. The DC and JAS scores, along with a challenge–no-challenge dummy variable, were entered into the regression analysis, producing an overall R^2 of .18. A significant effect for the challenge variable was found when it was entered into the analysis first, $F(1, 35) = 4.17$, $p < .04$. Subjects in the no-challenge condition attempted more lines ($M = 35.1$) than did subjects in the challenge condition ($M = 30.1$). The DC × Challenge interaction fell short of significance, $F(1, 35) = 2.39$, $p < .13$, and the AB × Challenge interaction was far from significant ($F < 1$). No other significant effects were found in these analyses.

To better understand the relation between DC score and the dependent measure, separate regression analyses were conducted for the challenge and no-challenge conditions. First, for subjects in the challenge condition, the JAS score was entered into the regression analysis. The results indicate that the JAS score was not a significant predictor of the number of lines attempted ($F < 1$). With the variance accounted for by the JAS removed, the DC score was entered into the regression analysis. The DC score proved to be a significant predictor of the measure, $F(1, 16) = 4.25$, $p < .05$. When entered into the regression analysis in the opposite order, the DC score, entered first, approached significance, $F(1, 16) = 3.69$, $p < .07$, whereas the JAS score, with the DC variance removed, again failed to predict the measure. The higher the DC score, the more lines the subject in the challenge condition was likely to have attempted. When the total lines measure was examined within hierarchical multiple regression analyses for the no-challenge subjects, no significant effects were found.

The results of Experiment 3, therefore, provide some support for the second step in the desire-for-control–achievement-behavior model. It was found that higher desire for control was associated with greater effort on the proofreading task, as indicated by the number of lines attempted, when the task was made a challenging one by the addition of two tasks. When the task was a simple proofreading task, no effect for desire for control was found. Although the experiment was a fairly vague laboratory task, the behavior in the challenge condition can be seen as somewhat typical of behavior in real work settings. At higher levels of achievement, workers often are called on to perform tasks that require the ability to alternate one's focus of attention and to coordinate several different aspects of a task. The results suggest that persons high in the desire for control react to such challenging jobs with greater effort in an attempt to overcome the challenge and establish the perception of control over the situation. However, no differences between high- and low-DC persons may be expected for jobs that present relatively low levels of challenge. Although they probably are motivated to avoid failure in this situation, high-DC individuals are not challenged enough to put forth the increased effort, as they are on the more difficult task.

Although the above analysis is consistent with the proposed model, note that subjects in the challenge condition had a more difficult task and therefore attempted fewer proofreading lines overall than did the no-challenge subjects. Because of this, it is not possible to determine if the high-DC subjects reacted to the challenge with increased effort or if the low-DC subjects responded to the challenge with decreased effort, or if both conditions were the case. Nonetheless, the difference in high-DC and low-DC persons' reactions to this situation has been demonstrated.

One additional interesting finding was the failure of the Type A–Type B variable to predict behavior in either of the two types of tasks. Although there are some methodological differences between the two experiments, Experiment 3 represents a failure to conceptually replicate the Fazio et al. (1981) findings. It is also interesting to note that although they are conceptually similar, the desire for control and Type A–Type B constructs were demonstrated to have a practical and empirical distinction.

Experiment 4

The third step in the proposed model is concerned with the individual's persistence on a difficult task. I propose that persons high in desire for control are more likely to persist at working on a difficult task than are persons low in the desire for control. For a high-DC individual the difficult task may be perceived as a challenge to his or her ability to control the situation. To give up on such a task is tantamount to admitting that one has encountered a task that he or she cannot control. It obviously would be incorrect to assert that high-DC persons never admit that they can not accomplish a task. However, in a situation in which it is strongly implied that the task is not impossible, merely difficult, the high-DC person can be expected to continue efforts to complete the task much longer than can the low-DC individual, who more readily admits to an inability to control a task. The high-DC worker who is given a difficult task on the job naturally will assume that the task can be completed with enough effort, and thus can be expected to produce that effort for a long period of time.

Subjects in Experiment 4 were presented with some problems for which, in reality, there were no solutions. Although they were given the option of moving on to another problem when they found the current problem too difficult, high-DC persons, it was predicted, would work at the unsolvable problems longer before giving up and, therefore, work at fewer problems during a specified period of time than would low-DC individuals. The amount of time spent working on an impossible task has been used in the past as a measure of persistence, and this persistence has been tied to higher levels of achievement motivation (Feather, 1961).

Method

Subjects. Twenty-five male and female undergraduates served as subjects in exchange for class credit. All had taken the DC scale approximately 4 weeks earlier as a part of a large test battery.

Procedure. Subjects participated in the experiment in groups. The experimenter explained that the study

was concerned with testing verbal skills. It was explained to subjects that they would be working on a series of Cryptoquote puzzles. The experimenter then passed out a sheet explaining what Cryptoquote puzzles were and, through examples, gave hints on how to solve them. The experimenter read the instructions aloud as the subjects read along. It was explained to subjects that the puzzles consisted of a series of letters that represented a well-known quote or phrase. The object of the task is to figure out the code and thereby discover the answer to the puzzle. The task is to discover which letters the letters in the puzzle actually represent. For example, an *A* might be represented by an *F*, such that every time an *F* appeared in the puzzle the subject would know that it was really an *A*.

After the experimenter determined that all of the subjects understood the task, a booklet containing the first three Cryptoquote puzzles was distributed. To aid the subject, a few of the correct letters were already filled in on these puzzles. Subjects were given 7 min each to work on the three puzzles. At the end of the 7 min, the experimenter stopped the subjects, gave the correct answer, but told subjects not to write the correct answer in the booklet if he or she had not already found the solution.

After the subjects completed the third puzzle, the experimenter distributed a second booklet containing seven puzzles, one per page. Subjects were told that they would have a total of 15 min to work on this set of puzzles. It was explained to subjects that they were free to spend as much or as little time as they desired on any of the seven puzzles. The only restrictions were that subjects were to place a check mark in the appropriate space on the puzzle sheet before beginning each puzzle and that once subjects had turned past a puzzle in the booklet, they were not to return to that puzzle. These restrictions were included to allow the experimenter to determine if subjects had worked on the puzzles even if no marks appeared on the page.

There were no letters already filled in on the puzzles to help the subjects in the second booklet. In reality, none of the puzzles was solvable. The absence of help with the second set of puzzles made the subjects' transition from solving the first three anagrams to total failure on the second set credible. No subjects expressed any suspicion that the puzzles might not be solvable. After 15 min, the experimenter stopped the subjects and debriefed them fully.

Results and Discussion

Subjects were divided via a median split into high- and low-desire-for-control halves. These two groups then were compared on two different measures. First, the number of Cryptoquote puzzles successfully completed from among the first three puzzles was determined for each subject. As can be seen in Table 2, nearly all of the subjects did quite well on this part of the task and did not differ by desire-for-control level. Next, the number of puzzles attempted during the 15 min session was determined for each subject. A lower number of attempted puzzles was indicative of greater persistence on the impossible task. As shown in Table 2, the two DC groups differed significantly on this measure, $F(1, 23) = 6.85$, $p < .02$: The high-DC subjects worked on significantly fewer puzzles than did the low-DC subjects.

Table 2
Mean Performance and Persistence on Cryptoquote Puzzles

Variable	Subjects	
	High-DC	Low-DC
No. of puzzles solved	2.92	2.67
No. of impossible puzzles attempted	3.31	4.50

Note. DC = desire for control.

The results thus provide support for the third step in the proposed model. High-DC subjects were found to work longer at difficult (in reality, impossible) tasks than were low-DC subjects. Consistent with the model, it can be said that these subjects were strongly motivated to deny that they were unable to control the task. Note that there was a strong implication that the tasks were indeed solvable, especially after the subject had performed relatively well on the earlier puzzles with the aid of the letters provided by the experimenter. Naturally, once the high-DC individual concludes that the task is an impossible one, he or she probably is no more likely than is the low-DC person to continue fruitless efforts.

Experiment 5

The final step in the model proposed here for the relation between desire for control and performance on achievement-related behaviors is concerned with attributions for successful and unsuccessful performances. It has been found that people who are high in achievement motivation and who generally reach high levels of achievement tend to exhibit a general pattern of attributions for success and failure (Weiner et al., 1971). This pattern, attributing successes to oneself and failures to unstable sources, is said to lead to

higher levels of motivation on subsequent tasks. The reason for this motivation follows logically. If I believe a success was caused by my own abilities or efforts, I am likely to continue my efforts on subsequent tasks in order to continue my success. On the other hand, if I believe that the success was caused by something outside of my control, then I am unlikely to perceive that my efforts will assure success in the future. If I attribute my failure to something stable, such as my lack of ability or a task that will always be this difficult, then there is little chance of success in the future and little reason to make a strong effort on subsequent tasks. On the other hand, if I believe that my failure was caused by a lack of effort on this particular task, than a strong effort on the next task should result in success.

Subjects in Experiment 5 were exposed to success and failure experiences. It was expected that subjects high in the desire for control would be more likely to attribute successful outcomes to their own abilities than would low-DC subjects. This is because high-DC individuals should be motivated to perceive that their successful efforts are representative of their ability to control the situation. What is unclear is whether high-DC persons are more or less motivated to see their successes as internally caused when their overall performance has been poor. On the one hand, it is possible that these subjects are motivated to see the entire task performance as being controlled by chance, thereby allowing for the belief that the overall failure experience does not represent the person's general ability level. On the other hand, one's perceived control over the task may be threatened with an overall failure experience, thus more strongly motivating the high-DC person to attribute his or her few successes to himself or herself. In Experiment 5, therefore, the extent to which subjects attributed their successful outcomes to their own ability versus luck was assessed in overall success and failure situations. It was expected that high-DC subjects would attribute more of their performance to ability when they were successful than would low-DC subjects. How DC level would affect the interpretation of the performance was less clear in the overall failure situation.

Table 3
Number of Correct Guesses Attributed to Skill

	Condition		
Subjects	Failure	Average	Success
High DC	5.27	8.57	20.14
Low DC	4.62	7.00	12.20

Note. DC = desire for control.

Method

Subjects. Sixty male and female undergraduates served as subjects in exchange for class credit. All had taken the DC scale several weeks earlier as part of a large battery of tests.

Procedure. A procedure similar to that used by Weiner and Kukla (1970, Experiment 5) was employed. Subjects were told that the experimenter would read a list of 50 numbers, all either *1* or *0*, in a particular order. The subject's task was to guess the number before the experimenter announced it on each of the 50 trials. Subjects were told that the numbers were not presented in a random order, but rather that there were general trends in the number presentation testing the subject's analytic ability. In reality, the numbers were presented in a random order.

After completing the 50 trials, subjects were told to indicate the number of correct guesses and then to complete a short questionnaire. Two key items on the questionnaire were taken from the Weiner and Kukla (1970) experiment. These were to indicate how many of the correct guesses were the result of skill rather than lucky guessing, and to estimate how many correct guesses they would make if asked to perform the task again with a new set of numbers. Following completion of the questionnaire, subjects were fully debriefed.

Results and Discussion

Subjects were trichotomized into failure, average, and success groups according to their number of correct guesses. Subjects also were divided into high- and low-DC groups via a median-split procedure. A 2 × 3 (High-DC–Low-DC × Failure–Average–Success Performance) analysis of variance was conducted on the two dependent measures. Two significant main effects emerged on the skill versus luck measure: desire-for-control effect, $F(1, 54) = 4.12$, $p < .05$, and performance effect, $F(2, 54) = 7.25$, $p < .01$. The interaction was not significant. As shown in Table 3, high-DC subjects attributed their performance to ability more often than did low-DC subjects. In addition, the better subjects did on the

task, the more they tended to credit their abilities. Planned comparisons found that high- and low-DC subjects differed significantly in the success group ($p < .05$), but not in the other two performance groups.

Two significant main effects also emerged on the measure asking subjects to estimate their performance on a second guessing task: desire-for-control effect, $F(1, 54) = 4.26$, $p < .05$, and performance effect, $F(2, 54) = 5.86$, $p < .05$. Once again, the interaction was not significant. Means for these effects are presented in Table 4. As seen in the table, high-DC subjects predicted that they would do better than did low-DC subjects on a second task in all three performance conditions. Planned comparisons between high- and low-DC subjects failed to reach significance in any one of these conditions, however. With regard to the performance main effect, subjects in the success condition exhibited the greatest confidence on an upcoming task, whereas subjects in the failure condition exhibited the least amount of confidence.

Experiment 5 therefore provides support for the fourth step in the proposed model. High-DC subjects were more likely to attribute their successful performance to skill (as compared to luck) than were low-DC subjects. This attribution pattern has been shown to be related to high levels of achievement. Note that the skill-versus-luck item was selected because it was the most logical for the particular task employed. It seems that subjects in this type of laboratory experiment all approach the short task with comparable levels of effort. Indeed, the task was described as one in which the key determinants of one's performance were one's ability and luck. Naturally, attributions have been found to be far more complicated than this. But for the purposes of the present series of experiments, the relation between desire for control and attributions posited by the model has been demonstrated. It should also be noted that high-DC subjects were more confident that they could perform well on a subsequent task, regardless of condition. This is consistent with the findings of Experiment 2, which demonstrated the high-DC individual's higher expectancy as reflected in a higher level of aspiration than that held by the low-DC person.

Table 4
Number of Correct Guesses Estimated for Another Task

	Condition		
Subjects	Failure	Average	Success
High DC	26.67	33.71	36.42
Low DC	25.50	27.57	34.40

Note. DC = desire for control.

Experiment 6

A final experiment was conducted to explore the relation between desire for control and attributions. It has been found that individual differences in desire for control are fairly stable personality dimensions. It can be interpreted from this that the pattern of attributions postulated by the model and demonstrated in Experiment 5 also should be fairly stable across time and situations. One way to examine this possibility and to provide further support for the model is to assess and compare desire for control with a measure of stable attribution patterns.

Peterson et al. (1982) developed the Attribution Style Questionnaire (ASQ) to assess stable patterns of attributions. The ASQ describes 12 situations, half with positive outcomes and half with negative outcomes. Subjects are asked to give a major cause for why each of these outcomes would happen to them. They are then asked to indicate on a series of 7-point scales the extent to which this cause is internal, stable, global (applies to many situations), and important. The combined totals for each of these items provides a measure of the subject's general tendency to make attributions along each of these four dimensions.

It can be predicted that desire for control, when applied to the desire-for-control achievement model, would correlate positively with the tendency to make internal attributions, but only for situations with positive outcomes. Desire for control should correlate negatively with the tendency to give internal attributions for situations with negative outcomes. Similarly, desire for control should be positively correlated with the tendency to give stable attributions for positive events, but

negatively correlated with the tendency to give stable attributions for negative events. Finally, it can also be predicted that desire for control will be positively correlated with the individual's tendency to see positive outcomes as caused by factors that will apply to many situations (global), but be negatively correlated with the tendency to give global attributions for events with negative outcomes. There is no clear prediction for the relation between desire for control and the tendency to see success or failure as important. It is possible that desire for control is positively related to both of these, for the high-DC individual might interpret both success and failure as being more important than might low-DC persons because both of these, success and failure, may reflect on the individual's ability to control the situation. This, however, is very speculative at this point.

Method

Subjects. Sixty-one male and female undergraduates served as subjects in exchange for class credit.

Procedure. All subjects were administered the DC scale and the Attribution Style Questionnaire. Half of the subjects received the DC scale first, and half received the ASQ first.

Results and Discussion

Subjects' responses to the ASQ were divided into those referring to events with positive outcomes and those referring to events with negative outcomes. For each of these subscales, a score for internality, stability, globality, and importance was calculated. Each of these eight scores was then correlated with the DC score. The correlations are presented in Table 5.

As can be seen in Table 5, there was some weak but consistent support for the hypotheses. Desire for control was positively correlated with the tendency to make internal, stable, and global attributions for events with positive outcomes, although these correlations are not strong and fall below the accepted level of significance. There was also a very weak finding for desire for control to be negatively correlated with the tendency to attribute events with negative outcomes to internal, stable, and global factors. These correlations are so small, however, that they can not be interpreted as supportive of the hypotheses.

Table 5
Correlations Between DC Scale and ASQ Subscales

Attribute	Events	
	Positive	Negative
Internality	.13	−.11
Stability	.22*	−.02
Globality	.22*	−.08
Importance	.18	.02

Note. DC = Desirability of Control; ASQ = Attributional Style Questionnaire.
* $p < .10$.

The small size of the correlations can be traced to several possible sources. First, the reliabilities of the subscales of the ASQ are disturbingly low; Peterson et al. (1982) reported internal reliability coefficients for these scales ranging from .44 to .69. Second, the scale contains some items that deal with affiliation situations and not achievement situations per se. This may weaken the applicability of the ASQ to the achievement model. Given these weaknesses in the scale, the correlations for the events with positive outcomes presented in Table 5, in combination with the results of Experiment 5, can be viewed as providing some additional support for the desire-for-control–achievement-behavior model.

General Discussion

The six experiments provide support for the model outlined earlier concerning the relation between individual differences in a general desire to control events and performance on achievement-related behaviors. Some support was found for each of the four steps in the model. Subjects high in the desire for control were found to aspire to higher levels of achievement than subjects low in desire for control. These high-DC persons also were found to have higher estimates for their performances and were able to adjust their expectations in a more realistic manner than were low-DC individuals. Subjects high in desire for control were found to respond to a challenge with more effort and to persist

at a difficult task longer than were low-DC subjects. Finally, high-DC subjects exhibited an attribution pattern for successes and failures that suggests a high level of motivation on subsequent achievement tasks.

Although the results of the experiments, using a variety of laboratory tasks, consistently support the model, there are several points of caution that need to be addressed briefly. First, as with any model, more experimental support needs to be obtained. The model and research reported here are intended as an initial step in describing the relation between desire for control and achievement behavior. It is very likely that the model will be expanded and modified as more research is accumulated.

Second, the importance of examining the hypotheses in real-world settings with different subject populations needs to be emphasized. It is impossible to create a laboratory situation that includes all of the complex forces that influence behavior in actual achievement settings. Such variables as competition from both inside and outside the organization, economic conditions, personal goals and distractions, supervision, economic incentives, affiliation among workers, and time effects can influence the manner in which desire for control and achievement behavior are related. For example, Burger (1980) found that high-DC subjects were especially susceptible to the undermining of intrinsic motivation with the introduction of extrinsic rewards. It is possible that working for money in a real job and working for the undefined rewards available in the laboratory task may be perceived quite differently by people high in the desire for control. In addition, the present series of experiments may be limited by a restricted range of DC scores. It may be expected that a wider range of individual differences in desire for control will be found in a more heterogeneous population than the student sample used here. This could account for some of the low correlations found in the investigations.

Finally, more elaboration is needed to specify when a high desire for control facilitates performance and when it becomes a liability. As outlined earlier, at each step in the model it is possible that an individual high in the desire for control will engage in behaviors that ultimately are unsuccessful or inefficient. A better understanding of the interaction between the type of task and the level of desire for control is needed if the model is to increase in its predictive value.

Another question that emerges from this research concerns the relation between the desire-for-control concept and the traditional need for achievement, or achievement motivation, construct. At least three plausible relations can be suggested. First, it is possible that achievement motivation is the superordinate category, with the desire for control being but one element that contributes to an overall high level of motivation in achievement settings. This view is consistent with the approach outlined recently by Spence and Helmreich (1983), in which it is argued that the need for achievement may not be a unidimensional construct. Spence and Helmreich identified three components of achievement motivation, some parts of which resemble the desire-for-control construct: the desire to work hard, mastery, and competitiveness. These investigators also have demonstrated that the components do not relate to achievement behaviors in exactly the same way. If desire for control is but one component of achievement motivation, then the present series of investigations can serve to further our understanding of how this one aspect of achievement motivation is related to various achievement-type behaviors.

A second possibility is that there are individual differences in a general desire to control events that can influence behavior in a large number of areas, of which traditional achievement contexts are but one. Indeed, researchers have uncovered significant effects when examining a wide variety of nonachievement behaviors with the DC scale. From this perspective one can conceive of achievement motivation as but one component of a more general desire for control. The third possibility is that neither the desire-for-control construct nor the achievement-motivation construct is superordinate, but rather each may be influenced by the other. A high desire for control, for example, may be manifested in a high-achievement motive, and a high need for achievement may be enhanced by a strong desire to control events. Obviously, pinpointing the relation between

the two constructs provides substance for further investigation.

If further research proves to be successful in detailing and refining the various stages in the model, there appear to be some important practical implications. The most obvious application is the matching of worker and task to maximize performance. Although it certainly is not advisable to assign personnel on the basis of one personality inventory, employers may want to consider desire for control along with other personality and aptitude variables when selecting persons for jobs or assigning jobs to employees. It may also be possible to identify problem behaviors, such as persisting too long on a difficult task or making external attributions for successes, and modify these through the application of the model. For example, high-DC workers might be instructed to spend no more than a certain length of time on a particular task and be assured that the inability to solve the problem is not an indication of one's lack of control. Sensitive supervisors also might see to it that these individuals have a large number of success experiences to keep motivation levels high. These possibilities are, of course, highly speculative at this time and await additional investigation.

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The *Psychology and Aging* journal is gearing up for its first year of publication in 1986. Manuscripts have been received in the editorial office for a number of months, but more than 50% of the original submissions have been experimental. The Editor, M. Powell Lawton, and the Associate Editor, Donald H. Kausler, wish to emphasize that *Psychology and Aging* will be a broad-ranging publication, and manuscripts from all areas of psychology are desired.

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