Generalization of learned helplessness: a test of the attribution theory models

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GENERALIZATION OF LEARNED HELPLESSNESS:
A TEST OF THE ATTRIBUTION THEORY MODELS

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Jean Griffin
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Abstract

This study investigated the relationship between global/specific and stable/unstable dimensions of attributions and the generalization of helplessness across tasks and situations. Four groups of subjects were given instructions suggesting that their performance on a Venn diagram task could be attributed to (a) global or specific and (b) stable or unstable factors. Then, during performance of this task, these subjects were given noncontingent correctness feedback on their responses. A control group given the same task received no attribution instructions or feedback on their performance. Generalization of helplessness was assessed by examining the magnitude of performance deficits displayed on an anagram task presented as a separate experiment. Contrary to expectations, no reliable differences in performance were found between any of the five groups. Factors which may have interfered with the manipulations are discussed. Suggestions for future research are provided.
Generalization of Learned Helplessness: 
A Test of the Attribution Theory Models

Learned helplessness refers to the cognitive, motivational, and emotional deficits that are imposed on an organism as a result of exposure to noncontingent and uncontrollable events. First observed in the animal laboratory (Overmier & Seligman, 1967; Seligman & Mair, 1967), this phenomenon has now been well documented across several animal species, and analogous results have repeatedly been obtained with humans (see Miller & Norman, 1979).

Seligman proposed a three-step sequence of events to account for helplessness deficits (Abramson, Seligman, & Teasdale, 1978). Subjects first perceive noncontingency between responses and outcomes, then form an expectation of future noncontingency, which in turn leads to problem-solving deficiencies (cognitive deficits), reduced persistence (motivational deficits), and depression (emotional deficits).

Learned helplessness is demonstrated with humans in the laboratory when subjects exposed to noncontingent outcomes in the training phase of a study show inferior performance in the test phase in comparison both to subjects who were allowed control of outcomes and to subjects who were given no pretreatment. For example, in several studies
subjects given inescapable noise in the training phase subsequently had difficulty learning the instrumental response that would enable them to escape the noise once the contingencies were brought under their own control. Subjects given no such pretreatment rapidly acquired the proper response (Glass, Reim, & Singer, 1971; Hiroto & Seligman, 1975; Klein & Seligman, 1976; Krantz, Glass & Snyder, 1974; Miller & Seligman, 1975).

While the above studies are significant in their own right, their implications are restricted by the fact that performance deficits were only tested for and displayed in the same situation and on the same task in which helplessness was originally induced. The extent to which performance deficits inappropriately generalize from situations in which subjects have no control over outcomes to diverse situations in which control is possible is an issue of primary importance in the learned helplessness literature.

Abramson et al. (1978) maintain that, "Helplessness exists when a person shows motivational and cognitive deficits as a consequence of an expectation of uncontrollability. The veridicality of the belief and the range of situations over which it occurs are irrelevant to demonstrating helplessness" (p. 55). Learned helplessness is thus said to exist both when people behave helplessly in situations in which they are helpless and when they behave helplessness in situations in which they are not helpless.
However, the more removed from the original training task and situation that performance deficits occur, the greater clinical significance learned helplessness acquires. In fact, response reductions displayed in uncontrollable situations may be seen as an adaptive rather than a maladaptive behavior (Miller & Norman, 1979).

Several studies have explored the generalization parameters of learned helplessness by investigating the cross-task and/or cross-situational generalization of helplessness deficits. The results of these studies provide a major source of conflict within the learned helplessness literature.

**Generalization Studies**

**Cross-task generalization.** Several studies have demonstrated generalization of learned helplessness across different types of tasks presented in the same setting. Bensen and Kennelly (1976), Klein, Fencil-Morse, and Seligman (1976), and Hiroto and Seligman (1975) induced learned helplessness in subjects by giving them unsolvable discrimination problems. The performance of the subjects was subsequently tested on solvable anagram tasks given in the same experimental setting. In each study the helpless group showed debilitated performance on the test task relative to subjects given solvable discrimination problems and no treatment controls.

Parallel results were obtained when subjects were
pretreated with inescapable noise and tested on solvable anagrams (Gatchel, Paulos, & Maples, 1975; Gatchel & Proctor, 1976; Hiroto & Seligman, 1975; Miller & Seligman, 1975), and when subjects were pretreated with unsolvable discrimination problems and tested on escapable noise (Hiroto & Seligman, 1975).

DeVellis, DeVellis, and McCauley (1978) demonstrated that generalization may occur not only across tasks, but that observers may generalize the helplessness of a person they are watching to their own possibilities of control. Subjects were instructed to determine the sequence of button pushes that would illuminate a light. The subjects were run in pairs; one subject in each pair received training and served as the model. The other subject observed the model receive either contingent or noncontingent feedback regarding the correctness of button pushes. All subjects were then tested on a different task in which they were instructed to determine which sequence of lever displacements would result in reinforcement. Not only did noncontingent models perform more poorly than contingent feedback and no treatment controls, but the subjects who merely witnessed the noncontingency experienced by their model showed performance deficits of equal or greater magnitude than those displayed by their model.

In contrast to the studies above, Thornton and Jacobs (1972) failed to find cross-task generalization of performance deficits. Subjects were given two forms of a test
measuring verbal and mathematical reasoning and perceptual organization. The first form was given immediately prior to a reaction time task, and the second was given at the conclusion of this task. Subjects who were given inescapable shock during the reaction time task showed facilitated performance on the second administration of the test, whereas subjects given either avoidable shock or no shock displayed no pre-to-post task change. Thus, unlike the aforementioned studies, performance deficits did not generalize from a predominantly motor task (escape from noise or shock) to a predominantly cognitive task (anagram solving or mental abilities test).

In sum, there is substantial evidence indicating that (a) performance deficits may be generated by exposure to uncontrollable events, and (b) these performance deficits may inappropriately generalize to controllable tasks given in the same setting. However, this finding is less consistent when generalization across response modalities is required (motor-to-cognitive). Discussions of the generalization issue in learned helplessness often emphasize the importance of cross-situational generalization of performance deficits to the relative neglect of cross-task generalization (e.g., Miller & Norman, 1979). However, in light of the importance of achievement in the classroom (which represents one situation in which many tasks are given), the implications of cross-task generalization of performance deficits should not be underestimated (see
Dweck, 1975, and Dweck, Davidson, Nelson, & Enna, 1978, for relevant research in the classroom).

**Cross-situational generalization with similar tasks.**
Other studies have investigated cross-situational performance decrements with similar training and test tasks. Roth and Bootzin (1974) gave subjects either solvable or unsolvable discrimination tasks or no pretreatment. All subjects were then taken to another room and given a similar discrimination task by a different experimenter under the guise of a separate experiment. One of the dependent measures on this task was the initiative subjects showed in attempting to fix a mechanical problem which interfered with the discrimination task. The subjects given unsolvable problems showed greater initiative in attempting to get help from the experimenter with the mechanical problem. However, they also tended to require more trials to solve the discrimination problem than either control group.

While the authors interpret their results as evidence contrary to the learned helplessness model, alternative explanations are possible depending on how the control groups attempted to deal with the interference. That is, if the control groups attempted personal problem solving strategies before soliciting help from the experimenter, the helpless group's haste in seeking external assistance might be seen as an assertion of their lack of control.

Roth and Kubal (1975) varied the amount of helplessness training given from one to three sets of unsolvable
discrimination problems. They also varied the importance of the discrimination training task via instructions that the task was either a puzzle or an indicator of success in college. The test task was a discrimination task similar to the one used in training which was given in a separate setting, allegedly as part of a separate experiment. Subjects given three important helplessness training problems showed the most marked performance deficits while subjects given only one actually showed superior performance to contingent feedback controls.

**Cross-situational generalization with different tasks.** The few methodologically sound investigations of cross-situational generalization using distinctly different training and test tasks have reported mixed results. Tennen and Eller (1977) noted that the Roth and Kubal study confounded attributional cues for failure with the amount of helplessness training trials by informing those subjects given additional training that the tasks were becoming increasingly easier. Thus it may have been the attributions subjects formed to explain their failure, rather than the number of times they failed, that led to the generalization of performance deficits to a new situation. Tennen and Eller conducted a cross-task and cross-situational generalization study isolating the effects of attributional cues and number of helplessness training trials. Three helpless groups were given either (a) one set of unsolvable discrimination problems, (b) three sets of unsolvable discrimination
problems allegedly becoming increasingly easier, or (c) three sets of identical problems allegedly becoming more difficult. In addition, a no feedback control and a contingent feedback control group were included. The test task was a series of 20 anagrams presented as part of a separate experiment in a different room by a different experimenter.

Subjects given three sets of "increasingly difficult" problems were superior in performance to each of the other groups, while subjects given "increasingly easier" problems showed the most marked performance deficits. The pattern of these results indicate that both the amount of helplessness training given and attributional cues for failure are important variables in determining subsequent performance in entirely new situations and on unrelated tasks.

Another cross-situational generalization study using distinctly different training and test tasks was conducted by Cole and Coyne (1977). Subjects were pretreated with either escapable or inescapable noise and tested on solvable anagrams. The test task was presented as either part of the same experiment or removed to a different location and presented as a separate experiment.

Subjects pretreated with inescapable noise and tested on anagram performance in the same situation displayed the expected performance deficits relative to the escapable group also tested in the same situation. However, the inescapable noise subjects tested in a new situation did
not show performance deficits. Rather, their performance was superior to the unsolvable-same situation group and equal to the control groups.

A debriefing questionnaire indicated that none of the inescapable subjects felt helpless or ineffectual during training. Half of the subjects reported that the noise task was meant to be unsolvable. It does not seem surprising then that subjects remaining in the same situation and tested by the same experimenter would continue to perform poorly on the test task and subjects tested in a new situation by a different experimenter would not.

The between groups differences in performance probably reflected differences in the credibility of the experimenter. Since the subjects felt that the training task was surreptitiously under the experimenter's control, those given the test task by the same experimenter had no reason to believe that their performance was now under their own control.

In sum, the fundamental issue of generalization of helplessness deficits beyond the situation in which helplessness was originally induced remains unresolved. Two of the reviewed studies were successful in demonstrating that performance deficits may in fact generalize, both to a task which was similar to the original (Roth & Kubal, 1975), and to a task which was clearly distinct from the original (Tennen & Eller, 1977). However, taken as a whole, the generalization studies indicate that there are limiting
variables that regulate the conditions under which generalization will occur. Two such factors which are clearly implicated are attributional cues for failure and the amount of helplessness training given (Tennen & Eller, 1977).

**Attribution Theory Models**

Seligman (1975) originally assumed that "Only in the rarest circumstances is a specific, punctate response or association learned.... When an organism learns that it is helpless in one situation, much of its behavioral repertoire may be undermined" (p. 36). However, as evidence to the contrary accumulated, the need for a revision of this assumption became increasingly apparent.

Two recently reformulated learned helplessness models have provided the heuristic groundwork necessary to reconcile the results of the conflicting studies (Abramson, Seligman, & Teasdale, 1978; Miller & Norman, 1979). Both versions have integrated learned helplessness into an attribution theory framework, and although both works were prepared independently, they show notable convergence on several points.

Retaining the central features of the original three-step model previously outlined, both new models add an attribution term to the sequence of events hypothesized to generate helplessness. The attribution term in the elaborated sequence mediates between the subject's initial perception of noncontingency between responses and outcomes.
and expectations of future noncontingency. Once expectations of future noncontingency are formed, symptoms of helplessness will be generated.

In addition, both models make explicit predictions regarding the characteristics of those attributions which will lead to the generalization of helplessness. Helplessness-attributions are characterized by at least three important dimensions: Internal/external, stable/unstable, and global/specific. The internal/external dimension distinguishes between subjects' beliefs that they alone are helpless but that someone else in a similar position could exert control (internal), and the belief that helplessness is common to everyone in a given situation (external). This dimension regulates the affective components of helplessness, such as self-esteem (Abramson et al., 1978), anxiety, and depression (Miller & Norman, 1979).

The stable/unstable dimension distinguishes between subjects' beliefs that the cause of helplessness is transient (unstable), and the belief that in the same situation in the future they will again be helpless (stable). This dimension regulates the generalization of helplessness across situations (or time, using Abramson et al.'s terminology).

The global/specific dimension distinguishes between subjects' beliefs that the determinant of helplessness is task specific (specific), and the belief that the source of helplessness will also cause them to be ineffectual on
other tasks (global). This dimension regulates the generalization of helplessness across tasks.

Thus, attributions qualify the impact that uncontrol-

lable events will have on subsequent performance. Attribu-
tions that are internal, global, and stable are expected
to have the broadest range of influence.

Empirical support for the attribution theory models
can best be derived from research specifically designed to
test the predictions of the attribution theory models, i.e.,
research demonstrating that between-groups differences in
the generalization of helplessness correspond with differen-
ces in attributions. No such studies have been reported.
However, a retrospective analysis of studies manipulating
and/or assessing attributions shows them to be generally
consistent with the models.

Tennen and Eller (1977) attempted to manipulate the
attributions of subjects by providing information regarding
the difficulty of the task. Instructions that the tasks
were becoming increasingly easy were designed to facilitate
ability attributions, which are internal, stable, and some-
what global. These subjects subsequently showed marked
performance deficits when tested on an unrelated task in
an unrelated situation. Instructions that the tasks were
becoming increasingly difficult were designed to facilitate
task difficulty attributions, which are external, unstable,
and specific. These subjects showed facilitated perfor-

mance in the test situation. Thus, to the extent that
subjects made the intended attributions for their performance, the results are consistent with the attribution theory models.

The attribution theory models are also consistent with the work of Carol Dweck and her associates. In one study (Dweck, 1975) a comparison was made between two treatment techniques designed to alleviate the symptoms of helplessness. Twelve children, identified as extremely helpless (i.e., expectations of failure and debilitated performance in response to failure) on the basis of ratings made by their school psychologists, principals, and teachers, served as subjects.

The children were given 25 sessions of either a Success Only or an Attribution Retraining treatment procedure. Both groups were given a criterion number of math problems to solve correctly during treatment sessions. For the Success Only group, the criterion was set at or below each child’s ability level so that failure was avoided. For the Attribution Retraining group, the criterion was occasionally set above each child’s ability level. After each failure this group was explicitly instructed that the failure was due to insufficient effort. Following treatment, the Attribution Retraining children either improved or maintained their level of performance in the face of failure; whereas the Success Only children continued to show deteriorated performance.
A 5-item scale presenting failure situations involving arithmetic was administered to the children both prior to and following treatment. The scale offered two internal attribution alternatives for failure; lack of ability (stable, somewhat global), and effort (unstable, somewhat specific). Prior to treatment, the helpless children tended to consider lack of ability, rather than lack of effort as the major determinant of failure. Following treatment, the Attribution Retraining children significantly increased the degree to which they considered lack of effort to be the primary cause of failure, while the Success Only group showed no such increase. The replacement of attributions to stable factors by attributions to unstable factors corresponded with the elimination of helplessness.

Dweck and Repucci (1973) also demonstrated that ability attributions for failure are associated with helplessness and effort attributions are associated with persistence. They administered the Intellectual Achievement Responsibility scale to a group of 40 fifth-grade students. This scale consists of 34 forced-choice items on which the respondent chooses between internal and external attributions for positive and negative achievement experiences. The internal items may be further subdivided into ability and effort alternatives. One month following the administration of this scale the children were given a helplessness training procedure and classified as helpless or persistent on the basis of their reactions to this failure experience.
The children who showed the greatest performance deficits after failure (helpless children) more often chose external attributions for academic performance, as measured by the Intellectual Achievement Responsibility scale, than children who persisted. When internal attributions were chosen by helpless children they typically chose ability attributions. In contrast, when internal attributions were chosen by persistent children (which was their tendency), they were much more likely to choose effort alternatives.

In conclusion, the attribution theory models appear to be consistent with the existing literature. In those studies where attributions were manipulated and/or assessed (Dweck, 1975; Dweck & Repucci, 1973; Tennen & Eller, 1977), attributions to stable factors were found to be associated with generalization of performance deficits to new situations. However, this support is limited to a retrospective analysis of research conducted prior to the reformulations of the model. In addition, no support can be drawn for the hypothesized functional relationship between cross-task generalization and the global/specific dimension, as this dimension has yet to be manipulated. Thus, the attribution-theory models require research designed specifically to test the global/specific and stable/unstable dimensions before empirical support for the generalization hypotheses is established.

The purpose of the present study is to investigate the relationship between attributions and the generalization of
performance deficits across tasks and situations, thus providing an empirical test of the attribution theory models. Two levels each of the global/specific and stable/unstable dimensions will be manipulated to yield four attribution groups. It is predicted that subjects attributing performance to global stable factors will display generalization of performance deficits while subjects attributing performance to specific unstable factors will not. It is difficult to predict the performance of the global/unstable and specific/stable groups. The global dimension in the first group should lead to generalization across tasks, but the unstable dimension should not lead to generalization across situations. The reverse is true in the specific/stable group. It is likely that in these combinations the dimensions will generate weak performance deficits.

Method

Subjects and Setting

Twenty male and 40 female college students were recruited on a volunteer basis from psychology courses at the University of the Pacific. Subjects were given minimal course credit for participation. All subjects were required to sign up for what they were told were two studies being run consecutively, a "Graduate Admissions" study and a "Learning" study. In fact, these two studies were the helplessness training and test phases, respectively, of the present research. Subjects were told that participation
in both studies would require one hour of their time. The true purpose of the study was not revealed until a debriefing session at the end of the test phase.

Subjects were recruited during four class periods held within the span of two weeks. As subjects were recruited they were separated by sex and randomly assigned to one of 5 conditions, yielding 4 males and 8 females in each condition. Subjects in all conditions were distributed throughout the duration of the study. Attributions were manipulated in four noncontingent feedback groups: (a) global/stable, (b) global/unstable, (c) specific/stable, and (d) specific/unstable. A no-feedback control group was also included.

The two phases of the study were conducted in separate but adjacent rooms located in the Psychology department. Both rooms were small, well lit, and soundproof. Each room was furnished with a table and two chairs.

**Materials**

**Training phase.** The training task was a series of 55 Venn diagram logic problems (Appendix A) constructed by the author, similar to those used on the analytic section of the Graduate Record Examination. These diagrams consisted of circles which illustrate the various relationships that may exist among objects and classes. Five diagrams were displayed on each of the 11 stimulus cards. The task was to choose the diagram which correctly illustrated the
relationship between three classes. The items were drawn from a diversity of subject areas such as history, biology, and literature, among others.

**Test phase.** The test phase consisted of a series of 20 anagrams (Appendix B) identical to those used by Tennen and Eller (1977) in another study of learned helplessness. The letter order of each anagram was arranged in the sequence 5-3-1-2-4. For example, BLOEN was the anagram for NOBLE. The anagrams were presented one at a time for a maximum of 100 sec.

**Dependent Measures**

The dependent measures, based on anagram performance, replicated the measures used by Baucom and Danker-Brown (1979). They were: (a) the number of failures to correctly solve an anagram within the 100 sec allowed, and (b) sec remaining when a subject chose to give up on an unsolved anagram and move on to the next one. The first measure is typically regarded as an index of cognitive deficits while the second measure is regarded as an index of motivational deficits. It should be noted, however, that the two measures are not completely independent. Unsolved anagrams may reflect cognitive and/or motivational deficits (i.e., a subject may leave an anagram unsolved because of lack of ability, lack of motivation, or both). Thus these measures do not completely separate cognitive and motivational deficits and are regarded as two measures of one construct (i.e.,
learned helplessness) by the present author.

**Procedure**

The study was conducted over a period of 18 consecutive days. Approximately four subjects were run each day at various times between the hours of 9:00 A.M. and 9:00 P.M. Each subject spent approximately 20 min in the training phase and between 20 and 40 min in the test phase, for a maximum of 60 total min.

**Training phase.** A female graduate student conducted the training phase of the study. This phase was presented as a "Graduate Admissions" study with the purpose of collecting data on the reliability of a graduate admissions test. To assess inter-subject communication the experimenter first asked subjects what they had heard about the study beyond what they were told during recruitment. Two sets of instructions were then read aloud and summarized by the experimenter. The first set of instructions (Appendix C) presented information regarding the nature of the diagram task. These instructions were designed to manipulate the attributions formed by the subjects in the four noncontingent feedback groups regarding their task performance. The global/specific dimension of attributions was manipulated via instructions that the test was either used as a measure of general intelligence (global) measuring breadth of knowledge, or that the test was one of a specific type of logical problem solving ability (specific). When
presented as a test of general intelligence an emphasis was placed on the range of subject areas from which the items were drawn. When presented as a test of logical problem solving ability an emphasis was placed on the format, requiring the ability to perceive relationships among classes.

The stable/unstable dimension of attributions was manipulated via instructions that preliminary data collected on the stability of test scores showed that scores do not vary on repeated testing occasions (stable), or that scores may vary as much as 50% when a person varies the amount of effort exerted in responding to the test items (unstable). For this test subjects in both unstable conditions were instructed to exert only as much effort as they would for a game. This instruction was designed to facilitate attributions to an unstable factor, effort.

Thus, for example, subjects in the global/stable attribution group were told that the test was a reliable measure of general intelligence, while subjects in the specific/unstable group were told that the test was an unreliable measure of a specific form of logical problem solving ability.

Subjects in the no-feedback control group were also presented with instructions regarding the nature of the diagram task but did not receive any attribution manipulations. They were told that the test consisted of sample items from a graduate admissions test and that the stability of scores had not yet been determined.
The second set of instructions (Appendix D) read aloud by the experimenter was the same for all groups. These instructions explained the procedure for taking the diagram task. Each test item was read by the experimenter who then displayed the corresponding stimulus card for a maximum of 12 sec. Subjects responded to each item by naming which of the 5 diagrams displayed on the card portrayed the correct relationship.

To generate helplessness, subjects in the four noncontingent feedback groups were given immediate noncontingent feedback on the correctness of each item. A random 27 of the 55 items were predetermined to be correct. Thus, while each item was paired with a card which displayed the true correct diagram, being told "correct" was not contingent upon choosing that diagram. At the end of the task all subjects in the noncontingent feedback groups were told that 27 of their answers were correct, which was 50% of the test. Subjects in the no-feedback control group were not given correctness feedback after each item or their final score (providing veridical feedback would confound amount of reinforcement with noncontingency, while providing false feedback would make this group conceptually similar to the noncontingent feedback groups). No-feedback control subjects were told that raw scores were meaningless because how well they did would depend on how well others performed on this test. They were told that they could obtain their scores in a few days but in the meantime it would be
impossible to assess the quality of their performance.

At the conclusion of the training phase all subjects were asked if they would like to volunteer to retake the "admissions test" at a later time and were reminded that their participation was also required in the "Learning" study which was being conducted in a nearby room.

Test phase. Two female undergraduates conducted the test phase, each of whom worked with one-half of the subjects in each of the five groups. The experimenters were unaware of the group assignments of the subjects and of the hypotheses being tested. The experimenters explained that this was a learning study and then read aloud the instructions for the anagram task (Appendix E). Before the anagram problems were presented, subjects were asked to rate on a 7-point scale the amount of prior experience they had with anagrams and similar word puzzles (Appendix F). (Measuring prior experience has been found to be an effective control for individual differences in anagram solving ability while avoiding the problems associated with more reactive measures (Tennen & Eller, 1977).)

Each anagram was presented on a card, one at a time, for a maximum of 100 sec. Subjects were allowed to give up on an unsolved anagram at any time but were not allowed to return to it later. Subjects were required to solve the anagrams without working them out on paper. The experimenter recorded the amount of time spent on each anagram and whether or not the solution was reached. When subjects
finished the anagrams they were completely debriefed (Appendix G) and were questioned regarding the credibility of the procedures (Appendix H).

Results

Means and standard deviations for the number of anagrams left unsolved and seconds remaining on unsolved anagrams are presented in Table 1. Higher means on unsolved anagrams and seconds remaining reflect larger performance deficits.

Table 1
Means and Standard Deviations for Behavioral Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Global/ Stable</th>
<th>Global/ Unstable</th>
<th>Specific/ Stable</th>
<th>Specific/ Unstable</th>
<th>No Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsolved Anagrams</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>5.33</td>
<td>8.25</td>
<td>7.33</td>
<td>6.16</td>
<td>6.25</td>
</tr>
<tr>
<td>SD</td>
<td>2.56</td>
<td>3.93</td>
<td>4.23</td>
<td>3.36</td>
<td>2.89</td>
</tr>
<tr>
<td>Seconds Remaining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>47.59</td>
<td>165.11</td>
<td>85.65</td>
<td>85.97</td>
<td>134.65</td>
</tr>
<tr>
<td>SD</td>
<td>75.68</td>
<td>225.01</td>
<td>119.98</td>
<td>134.65</td>
<td>74.31</td>
</tr>
</tbody>
</table>
Each of the two dependent measures was analyzed using a completely randomized design (CRF-5, Kirk, 1968). There were no significant differences between the five conditions for either measure. Number of anagrams left unsolved was further analyzed using a completely randomized factorial design (CRF-22, Kirk, 1968) with global/specific and stable/unstable dimensions as the two independent variables. This analysis revealed no significant main effects or interactions. A similar analysis conducted on seconds remaining on unsolved anagrams also revealed no significant main effects or interactions.

Pearson product moment correlation coefficients were computed to determine the relationship between ratings of prior experience with anagrams and the two dependent measures. Small negative correlations were found between prior experience and number of anagrams left unsolved, \( r (58) = -0.426, p < 0.01 \), and between prior experience and seconds remaining on unsolved anagrams, \( r, (58) = -0.212, p > 0.01 \). Since these correlations indicate that some of the performance of subjects on the anagram task could be accounted for by prior anagram experience, an analysis of covariance (CRAC-5, Kirk, 1968) was performed on the number of anagrams left unsolved with prior experience ratings serving as the covariate. No significant differences were found between the five conditions.

Means and standard deviations for responses to the three questions regarding subjects' suspicion of the
experimental procedures are presented in Table 2. The range possible in each case is 1-10 with 10 representing the greatest amount of suspicion. Visual inspection of the data suggested that the groups did not notably differ in their suspicion of a connection between the two phases of the study, in their suspicion that they were given noncontingent feedback during the training phase, or in their suspicion that they were given erroneous information regarding the nature of the training task (intelligence test or logic test).

Discussion

The results of the present study failed to support the predictions that (a) subjects in the noncontingent feedback groups would display performance deficits relative to the no-feedback control group, and that (b) the magnitude of performance deficits would vary as a function of attributions. No significant differences were found between any of the five groups on either dependent measure. In addition, the pattern of group means predicted on the basis of the attribution theory models did not emerge. Subjects in the stable conditions were expected to display greater performance deficits than subjects in the unstable conditions, and subjects in the global conditions were expected to display greater performance deficits than subjects in the specific conditions. The most striking deviation from the expected pattern occurred in the global/stable condition.
Table 2
Means and Standard Deviations
for Suspicion Ratings

<table>
<thead>
<tr>
<th>Suspicion</th>
<th>Global/ Stable</th>
<th>Global/ Unstable</th>
<th>Specific/ Stable</th>
<th>Specific/ Unstable</th>
<th>No Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Between Phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>2.83</td>
<td>1.59</td>
<td>2.42</td>
<td>2.08</td>
<td>2.83</td>
</tr>
<tr>
<td>SD</td>
<td>2.73</td>
<td>1.04</td>
<td>2.6</td>
<td>2.25</td>
<td>2.54</td>
</tr>
<tr>
<td>Noncontingent Feedback</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>M</td>
<td>2.82</td>
<td>2.92</td>
<td>3.58</td>
<td>3.42</td>
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<tr>
<td>SD</td>
<td>2.65</td>
<td>2.25</td>
<td>2.56</td>
<td>3.01</td>
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<tr>
<td>Intelligence Test or Logic Test</td>
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<tr>
<td>M</td>
<td>4.54</td>
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<td>4.17</td>
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<tr>
<td>SD</td>
<td>2.67</td>
<td>1.65</td>
<td>3.45</td>
<td>3.24</td>
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Note: Minimum score = 1. Maximum score = 10.
Rather than displaying the greatest performance deficits, mean performance for this group indicated the least deficits in comparison with each of the other groups on both measures.

The failure of any of the noncontingent feedback groups to display performance deficits in comparison with the no-feedback control group raises two possibilities: (a) helplessness was not induced, and (b) helplessness was induced but the attributions associated with its generalization were not successfully manipulated.

It is difficult to evaluate whether helplessness was induced because performance deficits were not tested for on the training task and in the training situation. The Venn diagram task used to induce helplessness has not been used in previous learned helplessness research and it is possible that some aspect unique to this procedure precluded its effectiveness. However, the Venn diagram task was designed to include those variables that have been identified in the experimental and theoretical literatures (e.g., Miller & Norman, 1979) as capable of inducing helplessness (i.e., noncontingent feedback delivered on a 50% correct schedule). Future generalization studies which do not replicate established training tasks should include a control group tested for helplessness on the original training task and situation to eliminate any doubts of the efficacy of the helplessness manipulation.

The possibility that helplessness was induced but that the attributions associated with generalization were not
appears to be a more likely explanation for the present findings. Drawing upon the learned helplessness and attribution literatures, two factors which may have interfered with the attribution manipulations become apparent. First, the subjects in the present study were college students, who typically expect response-outcome contingency as well as success (Parducci, cited in Miller and Norman, 1979, p. 114). The outcomes encountered in the training phase would therefore be contrary to subjects' prior expectations. Miller and Norman (1979) cite several studies which indicate that the attribution process is influenced by the congruence between prior expectations and current outcomes. For example, McMahan (1973) found that outcomes which disconfirmed expectations were attributed to unstable causes whereas outcomes which confirmed expectations were attributed to stable causes. Thus, the subjects in the present study may have attributed training task performance to unstable factors regardless of the attribution cues provided in the instructions.

Miller and Norman (1979) suggest that studies using college students will require very strong situational cues to counteract subjects' tendency to attribute learned helplessness outcomes to unstable factors. It is interesting that the two successful demonstrations of cross-situational generalization known to the author also used college students as subjects but differed most notably from the present study in the amount of helplessness training
given. Roth and Kubal (1975) and Tennen and Eller (1977) presented subjects with three sets of helplessness training problems, for a total of 120 and 144 trials respectively, in contrast to the one set of 55 trials used in the present study. Perhaps these studies, by presenting subjects with protracted helplessness training, inadvertently manipulated expectancies of success and/or control in future situations. Parametric studies varying the amount of helplessness training and measuring expectancies may elucidate the relationship between these variables and the generalization of helplessness. In addition, future learned helplessness research may more readily generate attributions to stable factors and cross-situational generalization of helplessness if subjects are selected on the basis of their prior expectancies.

A second factor which may have interfered with the attribution manipulations is suspicion of the experimental procedures, including the attribution manipulations themselves. The stable/unstable manipulation consisted of instructions that scores on a second administration of the Venn diagram test would either be substantially changed (unstable) or be nearly identical to original scores (stable). However, within the two stable groups 70% of the subjects volunteered to retake the test despite instructions that the test was completely optional and scores were unlikely to change (global/stable volunteers = 83.3%, specific/stable volunteers = 58.3%). A comparable number
of subjects within the two unstable groups (62%) volunteered to retake the test (global/unstable volunteers = 50%, specific/unstable volunteers = 75%). Willingness to retake the test without additional course credit implies the belief that scores will change and the similar number of volunteers from the stable and unstable groups suggests that the groups did not differ in this belief.

The global/specific manipulation consisted of instructions that the Venn diagram test was either a measure of general intelligence (global) or a measure of a specific type of logical problem solving ability (specific). However, as indicated in Table 2, subjects within each group varied considerably in the extent to which they reported suspicion that the test measured what it was said to measure. Some of the subjects within each group reported almost total suspicion while others reported no suspicion.

Table 2 also indicates that subjects within each group varied considerably in the extent to which they reported suspicion that the feedback delivered on the training task was accurate. These suspicion ratings may be anecdotally corroborated by comments made by most subjects of surprise over many of the test questions on which they were correct and incorrect. Inasmuch as subjects questioned the veridicality of the feedback they received during the training phase (as opposed to accepting it at face value until questioned during debriefing), their suspicion would discount the credibility of the attribution cues provided in the
instructions. (i.e., subjects who believe feedback reflects experimental deception cannot at the same time believe feedback reflects their personal skills, be they global or specific or stable or unstable.) In addition, experimental deception is a factor which is unstable beyond the duration of the experiment and according to the attribution theory models should not lead to cross-situational generalization. Thus, in both the present study and the study reported by Cole and Coyne (1977) in which many subjects believed that their training task performance was surreptitiously under experimental control, suspicion of feedback may in part account for the failure of helplessness to generalize across situations. (However, as Cole and Coyne demonstrated, this factor would not prevent performance deficits from being induced.)

Credibility of noncontingent feedback may be improved in future research if sections of items or trials rather than individual items serve as the basis of feedback. Predetermined criterion levels could be set for each section and noncontingent feedback regarding whether or not criterion was reached could be delivered. Whereas individual items may have absolute right and wrong responses, criterion levels may be set arbitrarily and their accuracy therefore more difficult to determine.

One factor which may have inflated the within-groups variability of scores should be noted. Miller and Norman (1979) hypothesized that performance deficits would covary
with the subjective importance of the training task. Roth and Kubal (1975) manipulated task importance and found that subjects given noncontingent feedback on an important task displayed stronger performance deficits than subjects given noncontingent feedback on an unimportant task. In the present research the instruction given to all groups that the training task consisted of items from a graduate admissions test was designed to control for subjective importance of the training task. It is conceivable, however, that this instruction had the opposite effect of making the task differentially important to subjects who did and did not intend to apply to graduate school. Those subjects within each group who intended to apply to graduate school may have regarded the training task as more important and consequently developed greater performance deficits, than their same-group counterparts who did not intend to apply to graduate school.

Future research may reduce this extraneous source of variance by choosing training task descriptors that are more immediately relevant to all of the subjects in the study. For example, the task may be described to college students as a predictor of grade point average.

Finally, the above possibilities regarding uncontrolled factors which may have influenced the attributions formed by subjects in the noncontingent feedback groups raises a similar question regarding the attributions of the no-feedback control group. It is possible that subjects in
this group spontaneously formed attributions on the basis of the information provided in the training phase instructions, although these instructions were intended to be devoid of attributional cues.

No-feedback control subjects were instructed that the test they were given was a graduate admissions test used by graduate programs in a diversity of fields, and that the test was of unknown stability (test-retest reliability). It is not unreasonable to suspect that subjects would consider such a widely used test to be an indicator of quite global abilities. Further, because the reliability of the test was in question, subjects may have assumed that their scores would be likely to change. Thus, in effect these instructions may have generated global/unstable attributions. Of course similar arguments may be presented that a graduate admissions test would be considered a measure of a specific subset of abilities, rather than global, but the point here is that eliminating explicit attributional cues from the instructions given to a control group does not insure that attributions will not be generated. Future research using a no-attribution control group should administer an attribution scale to a subset of this group to determine whether in fact attributions are generated, and if so the dimensions that characterize those attributions.

More generally, interpretation of all future research addressing the premises of the attribution theory models
would be greatly enhanced if attributions are measured prior to the test phase. To date, the most prevalent methodology of generalization studies, including the present study, has been to design attribution manipulations and infer their success from the pattern of results. A major drawback of this methodology is that should the results not follow the expected pattern, the present study being one case in point, there is no empirical basis by which to evaluate the attribution manipulations apart from the other experimental procedures. In addition, even when the results support the predictions of the study it is not always possible to determine the effect of any particular dimension of attributions. For example, Tennen and Eller (1977) attempted to manipulate the stable/unstable dimension of attributions via instructional cues designed to generate attributions to either task difficulty (external, unstable, and specific) or ability (internal, stable, and global). However, because these attributions vary along more than one dimension it is not possible to isolate the effect of the stable/unstable dimension on subsequent performance.

To date, very little is known about the attribution process (Bem, 1972; Wortman & Dintzer, 1978) or the individual difference variables and situational cues that may influence the development of attributions associated with learned helplessness (Miller & Norman, 1979). Consequently, it is as yet very difficult to design an attribution manipulation which avoids confounding two or more dimensions of
attributions. Thus, a conceptual replication of the present study should measure the relevant dimensions of attributions formed by half of the subjects within each group to establish the specific effects of the attribution manipulations. A comparison of the test phase performance of subjects who were and were not given the attribution scale would reveal the potentially reactive effects of responding to the scale. This type of data would not only increase confidence in the internal and external validity of any particular study, but also enable learned helplessness researchers to address a much broader range of empirical questions, e.g., whether or not attributions are formed spontaneously or are merely the product of attribution scales, and if so at what point in time and with what effect on behavior (Bem, 1972; Wortman & Dintzer, 1978). The relevance of these issues to the attribution theory models of learned helplessness is apparent and they are worthy of further investigation.

In summary, the attribution theory models of learned helplessness have opened several avenues of research in an area that is both clinically and theoretically interesting. The present study failed to support the generalization premises of the models, however these findings may have resulted from one or more factors which interfered with the experimental manipulations. Future investigations on the effect of individual difference variables, such as prior expectancies, and situational cues, such as instructional
set, on the attribution process may identify the optimal means by which to manipulate attributions in the laboratory. Finally, it is likely that studies which systematically measure attributions and their corresponding effects on behavior will contribute to a more thorough understanding of learned helplessness.
References


Glass, D. C., Reim, B., & Singer, J. R. Behavioral consequences of adaptation to controllable and uncontrollable noise. Journal of Experimental Social Psychology, 1971, 7, 244-257.


Appendix A

Venn Diagram Training Task

Items for Which Subjects Were to Illustrate the Relationship Between the Three Classes

(Subjects were told they were correct on all nonstarred items and incorrect on all starred items regardless of their response.)

1. Dancers, Singers, Actors
2. Physicists, Novelists, Authors
*3. Dinosaurs, Mastodons, Tyrannosaurus Rex
4. Algae, Fungi, Molds
5. Poets, Authors, Playwrights
6. War Heroes, College Graduates, U.S. Presidents
*7. Works of Nathaniel Hawthorne, 18th Century English Literature, Puritan Literature
8. Virus Diseases, Influenza, Pneumonia
*9. Appetizers, Soups, Deserts
*10. Paleocene Epoch, Cretaceous Period, Mesozoic Era
11. B Complex Vitamins, Carotene, Riboflavin
*12. Homo, Chordata, Lemur
13. Mathematicians, Philosophers, Navigators
14. Genetic Diseases, Cystic Fibrosis, Downs Syndrome
15. Diamonds, Precious Gems, Pearls
16. Mollusks, Clams, Earthworms
*17. City Buildings, Sky Scrapers, Airports
*18. Huguenots, Protestants, Puritans

41
* 19. Hydra, Sponge, Protozoa

20. Composers, Conductors, Musicians

* 21. Consultants, Clinicians, Forresters

22. Insects, Disease Carriers, Animals

* 23. Good Sources of Vitamin A, Good Sources of Vitamin B, Vegetables

24. Isosceles Triangles, Equalateral Triangles, Right Triangles

* 25. Medical Doctors, Psychologists, Psychiatrists

* 26. Monozygotic Twins, Siamese Twins, Fraternal Twins

27. Americans, Generals, Traitors

* 28. Factors of 24, Factors of 12, Factors of 32

* 29. Hardware, Weapons, Tools

* 30. Genetically Linked Traits, Color-blindness, Baldness

31. Grocery Store Products, Food, Canned Goods

32. Codeine, Opium Derivatives, Narcotics

33. Chemists, Scientists, Professors

* 34. Crimes, Felonies, Stealing

* 35. Grandmothers, Mothers, Sisters

* 36. SEATO Nations, New Zealand, France


38. Actors, Writers, Comedians


* 40. Presidents Holding Office for at least Two Terms, Woodrow Wilson, Democrats

41. Warm Blooded Vertebrates, Reptiles, Amphibians

* 42. Kitchen Appliances, Furniture, Antiques

43. Geniuses, Kindergarten Children, Criminals
44. Text Books, Serials, Library Books

* 45. Ornithologists, Painters, U.S. Citizens

* 46. Columnists, Critics, Writers

47. Autonomic Nervous System, Central Nervous System, Parasympathetic Nervous System

* 48. New Deal Economic Measures, ICC, IWW

49. Senior Citizens, Grandparents, Widows

* 50. Circus Animals, Cheetahs, Felines

51. Nitrogen, Arsenic, Phosphorus

* 52. Preventative Medicine, Birth Control, Vaccines

* 53. Whole Numbers, Prime Numbers, Even Numbers

* 54. Paper Products, Wood, Cardboard

55. Pictures, Paintings, Photographs

**Stimulus Cards**

The stimulus cards (on the following pages) are from which subjects chose the diagram correctly illustrating the relationship between the three classes in each item.
Appendix B

Anagrams and Solutions

1. iardt - Triad
2. biath - habit
3. ulatf - fault
4. erlkc - clerk
5. ouhlg - ghoul
6. bloen - noble
7. rnutb - burnt
8. boarl - labor
9. unatj - jaunt
10. othlc - cloth
11. gaurs - sugar
12. ntohm - month
13. maunh - human
14. airnt - train
15. enrdt - trend
16. imlbrc - climb
17. uirtf - fruit
18. alces - scale
19. coanb - bacon
20. arudg - guard
Appendix C

Training Task Instructions

All Groups:

As I mentioned in your class, this study deals with graduate school admission. More specifically, I am studying the test that all students have to take before they can go to graduate school. The test is called the GRE and scores on this test are the single most important factor in determining who does and who does not get accepted into graduate school. By the way, this applies to most fields except law and medicine which require very similar tests.

Global/Stable Group:

The GRE is divided into three sections, a Verbal section, a Quantitative section, and an Analytic section. I am studying whether or not people can improve their scores on the Analytic section. The Analytic section is a general intelligence test. It measures the breadth of a person's knowledge as well as their abstract problem solving ability. Also, because this test is timed it measures what is called the power or speed of your thinking.

Intelligence is a relatively stable characteristic, therefore any person who takes the same intelligence test twice should get about the same score both times. As it turns out, people do get nearly the same score each time they take this test. What this means is that it is a very
good intelligence test. Unfortunately it also means there is nothing a person can do to improve their test scores. Today I will be giving you 55 sample items from the Analytic section. When we are finished, I will ask you if you would like to volunteer to retake this test at your convenience. If you would like to retake the test you will find that your second score will be nearly identical to the first. Do you have any questions?

**Global/Unstable Group:**

The GRE is divided into three sections, a Verbal section, a Quantitative section, and an Analytic section. I am studying whether or not people can improve their scores on the Analytic section. The Analytic section is a general intelligence test. It measures the breadth of a person's knowledge as well as their abstract problem solving ability. Also, because this test is timed it measures what is called the power or speed of your thinking.

Because intelligence is a relatively stable characteristic it has been assumed that scores on intelligence tests such as this would also be stable, meaning that the same person would repeatedly get nearly the same score. However there are many unstable conditions such as fatigue which may interfere with a person's ability to perform and thereby affect intelligence tests scores. I am studying one such unstable condition, effort. As it turns out, when people vary the amount of effort they put into this test on different
testing occasions, their scores may vary as much as 50%. This can easily make the difference between getting in and not getting into graduate school. Today I will be giving you 55 sample items from the Analytic section. I would like you to think of it as a game and not try very hard to come up with the right answers. In fact, I would like you to give me the first answer that looks good to you. Just before you leave today I will ask you if you would like to volunteer to retake this test under normal conditions at your convenience. If you would like to retake the test you will find that your score will be substantially better on the second test. Do you have any questions?

Specific/Unstable Group

The GRE is divided into three sections, a Verbal section, a Quantitative section, and an Analytic section. I am studying whether or not people can improve their scores on the Analytic section. The Analytic section is a test of a specific type of logical problem solving ability. It measures your ability to perceive relationships among different groups and says nothing about your general intelligence or even your ability to solve other types of logic problems.

Because logical problem solving ability is a relatively stable characteristic it has been assumed that scores on logic tests such as this would also be stable, meaning the same person would repeatedly get nearly the same score.
However, there are many unstable conditions such as fatigue which may interfere with a person's ability to perform and thereby affect logic test scores. I am studying one such unstable condition, effort. As it turns out, when people vary the amount of effort they put into this test on different testing occasions their scores may vary as much as 50%. This can easily make the difference between getting in and not getting into graduate school. Today I will be giving you 55 sample items from the Analytic section. I would like you to think of it as a game and not try very hard to come up with the right answers. In fact, I would like you to give me the first answer that looks good to you. Just before you leave today I will ask you if you would like to retake this test under normal circumstances at your convenience. If you would like to, you will find that your score will be substantially better on the second test. Do you have any questions?

**Specific/Stable Group:**

The GRE is divided into three sections, a Verbal section, a Quantitative section, and an Analytic section. I am studying whether or not people can improve their scores on the Analytic section. The Analytic section is a test of a specific type of logical problem solving ability. It measures your ability to perceive relationships among different groups and says nothing about your general intelligence or even your ability to solve other types of logic problems.
Logical problem solving ability is a relatively stable characteristic. Therefore any person who takes the same logic test twice should get nearly the same score both times. As it turns out, people do get nearly the same score each time they take this test. Unfortunately, it also means that there is nothing a person can do to improve their test scores. Today I will be giving you 55 sample items from the Analytic section. When we are finished, I will ask you if you would like to volunteer to retake this test at your convenience. If you would like to retake the test you will find that your second score will be nearly identical to the first. Do you have any questions?

No-Feedback Control Group

I am studying whether or not people's scores will change if they take this test more than once. In other words I am looking at the test-retest reliability or stability of scores. I don't have enough data yet to determine how much your score is likely to change if you take this test again.

Today I will be giving you 55 sample items from the GRE. It will not be possible for me to tell you your score today because it will first have to be converted into a percentile before your score will be meaningful. When you finish the test you will probably have some feeling about how well you did. However, the score you get will depend on how well you do in comparison to other people who also
take the test. Thus it is not possible for you to predict your score without knowing how well other people score. If you would like to know how well you do I will be able to tell you in a few days. When we are done today I will ask you if you would like to retake this test at your convenience. The second test is completely optional.
Appendix D

Directions for Taking the Training Task

This test is presented orally on an individual basis. For each of the items, I will show you a card presenting five diagrams, similar to the card I am showing you now. I will then read aloud a list of three objects or classes. You are to choose which of the five diagrams displayed on the card best illustrates the relationship between the classes.

Circles which do not touch indicate that the classes contain no members in common. For example, the classes "male" and "female" have no members in common. Circles which overlap indicate that some, but not all, of the members are contained in both classes, for example "males" and "babies." Some, but not all, males are babies just as some, but not all, babies are males. Circles completely contained within another circle indicate that all of the members of the smaller circle are also members of the larger circle, but the reverse is not true. For example "fathers" and "males"; all fathers are males but not all males are fathers.

The size of the circle bears no relation to the size of the class. You will be allowed to look at each card for 15 seconds. When the 15 seconds are up I will say "now." That is your cue to tell me which of the diagrams you are choosing. If you have no alternative in mind, guess. There is no penalty for incorrect guesses. Are these instructions clear?
Appendix E

Instructions for Taking the Test Task

(All Groups)

This is an experiment on learning. You will be given a series of 20 anagrams to solve. Anagrams are words with rearranged letters. To solve each anagram you will need to unscramble the letters. Each anagram is printed on a card. I will hand you the cards one at a time. You will be required to solve the anagrams without the use of pencil and paper. You will have up to 100 seconds to work on each anagram. As soon as you have solved one, tell me your answer and I will give you the next card. You may give up on an anagram at any time by simply asking me to go on to the next card, but you may not go back to those anagrams later. Do you understand these directions?
Appendix F

Rating Scale for Prior Experience with Anagrams

Please indicate the amount of experience you have had working anagrams and similar word puzzles (e.g., Scrabble) on this scale.

No Experience 1-2-3-4-5-6-7 Very Much Experience
Whatsoever
Appendix G

Debriefing

Experimental Groups

The two studies in which you have just participated, this study and the "Graduate Admissions" study, are in reality two phases of the same study. In the test you took in the first study you were told that you got half of the items right regardless of how many you really got right. That is, you were given feedback that was not contingent on your answer. I measured your performance on the anagram task to see what the effect of that experience was on your later performance. We are looking at the effect of non-contingent feedback on performance in an unrelated situation.

No-Feedback Control Group

The two studies in which you have just participated are in reality two phases of one study. The test you were given in the first study was made up by the experimenter. You were in a control group.

All Groups

Please do not discuss this study with anyone. It is very important that subjects do not know that there is any connection between these studies. I cannot stress enough how important it is that you do not tell your friends or
any other people who may be subjects in the future anything about either phase of the experiment. If you should be asked, just mention that you were in two studies and you took some kind of a test in one and played a word game in the other. Thank you very much for participating in this research and for not discussing this research with others.
Appendix H

Debriefing Questions

All Groups

1. Did you suspect any connection between the two studies?
   Not at all 1---2---3---4---5---6---7---8---9---10 Completely suspicious

Experimental Groups

2. Did you suspect that the test used in the "Graduate Admissions" study was unsolvable?
   Not at all 1---2---3---4---5---6---7---8---9---10 Completely suspicious

3. Did you suspect that the test given in the "Graduate Admissions" study was not truly a measure of general intelligence (logical problem solving ability)?
   Not at all 1---2---3---4---5---6---7---8---9---10 Completely suspicious