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RACIAL DIFFERENCES IN REACTANCE
AND LEARNED HELPLESSNESS

by

Sandra E. Lowe

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

January

1980

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INTRODUCTION

Throughout our lives, most of us will encounter many events over which we will have no influence. Such events may include death, illness, or loss of a job and may be due to chance, to limitations in our own abilities, or to the power and authority of other people (Wortman and Brehm, 1975). We have reason to believe that profound psychological upset can result from exposure to uncontrollable events which may cause feelings of helplessness in regard to one's environment. Seligman (1974, 1975) has argued that helplessness as a result of feelings of lack of control may be an important factor in the development of such disorders as depression. At the same time, feelings of lack of control have also been viewed to result in many types of antisocial, or acting out, behaviors.

Thus, there are two theories which make rather specific predictions concerning reactions to lack of control. These theories are Brehm's (1966) theory of psychological reactance and Seligman's (1974, 1975) learned helplessness model. The present investigation is concerned with racial differences and the effects of varying amounts of experience with helplessness over uncontrollable outcomes on performance of concept formation problems. In addition, it will attempt to experimentally validate Wortman and Brehm's (1975) reactance-learned helplessness model of depression.

REVIEW OF RELATED LITERATURE

Learned Helplessness

The concept of "learned helplessness" has been of increasing interest since 1967 when Overmier and Seligman did a series of experiments using mongrel dogs. In these experiments, Overmier and Seligman (1967) showed that exposure to inescapable shock resulted in subsequent interference in the acquisition of escape-avoidance learning. Further investigations with animals have also indicated that exposure to uncontrollable aversive stimulation results in impaired learning of adaptive responses (Seligman, Maier, and Solomon, 1971). This phenomenon of learned helplessness refers to the process whereby noncontingent reinforcement results in a perception that events are uncontrollable, that responses and reinforcements are independent. The focus of much research on learned helplessness has been on inappropriate generalizations from an uncontrollable situation to a situation in which control is in fact possible. Research has been done with both animal and human subjects to examine the learned helplessness model. A brief summary of some of this research follows.

Seligman and Maier (1967) demonstrated that it is lack of control over aversive stimulation and not the stimulation itself that produces helplessness. They furthermore found that, if an animal receives controllable shock before being subjected to uncontrollable

aversive stimulation, this prior experience with controllable shocks will interfere with subsequent learning that shock is uncontrollable. These experiments also suggest that learned helplessness might possibly be eliminated by forcibly demonstrating to a helpless animal that responses on its part can result in shock termination. Seligman, Maier, and Geer (1968) did just that and were successful in retraining dogs to escape and avoid shock. More recently, however, Maier (1970) has found that experience with controllable shocks does not eliminate entirely helpless behavior in rats.

One of the first helplessness experiments with human subjects was done in 1971 (Fosco and Geer, 1971). In their experiment solutions of problems avoided shock for the subject while non-solution resulted in shock. The results indicated that more mistakes occurred with increased prior experiences with no control. Thornton and Jacobs (1971) also attempted to test the learned helplessness hypothesis with human subjects. In this experiment subjects received electric shocks while working on a button-pressing task. During the training phase of the experiment one group of subjects (Perceived Avoidance condition) could avoid shocks by pressing the correct button; two other groups were yoked to the first, receiving the same amount of shock. One performed the task, but was told that task performance and shocks were unrelated and the other was given no task, but was merely asked to endure the shocks. The results of this experiment showed that subjects in the Perceived Avoidance condition performed significantly better on the test task than the remaining groups which did not differ from one another.

Hiroto (1974) found in his experiment, using noise as the uncontrollable condition, that subjects who were unable to escape the noise in the training situation, but had been led to believe they had control, performed significantly worse on the escape-avoidance task used in testing. They had longer response latencies and more failures to escape than did subjects in the escape and no pretreatment groups. This experiment and that of Fosco and Geer (1971) do not provide unequivocal support for the learned helplessness model since both experiments have confounded the uncontrollability of the aversive stimulation with the aversive stimulation itself. However, in their experimental design, Thornton and Jacobs (1971) attempted to control for this factor.

A series of experiments relevant to the learned helplessness model was presented in a book by Glass and Singer (1972). In this book they reported experiments designed to examine the effects of stress, adaptation to stress, and adverse aftereffects of stress. Their studies showed that subjects who had access to an escape button and perceived themselves as in control over aversive stimulation showed fewer poststress performance decrements than did subjects without such a button.

The purpose of the above experiments has been to demonstrate learned helplessness in human subjects. There have been other studies which have sought to determine whether learned helplessness impairs performance only on tasks similar to the training task or whether performance would also be impaired on tasks different from that in the training situation. Hiroto and Seligman (1975) conducted experiments

using either instrumental pretraining which involved pressing a button to avoid aversive noise or cognitive pretraining which involved solving concept formation problems. There were four simultaneous experiments as follows: a) subjects received pretreatment on an instrumental task followed by testing on another instrumental task, b) instrumental pretreatment and cognitive testing, c) cognitive pretreatment and instrumental testing, and d) cognitive pretreatment and cognitive testing. The authors suggest that their data supports the hypothesis that learned helplessness does generalize across different situations.

Thornton and Jacobs (1972) and Roth and Bootzin (1974) attempted to demonstrate learned helplessness effects, but found that subjects who were exposed to uncontrollable stimulation in the training session exhibited less helplessness in the testing session than subjects who were not. Thornton and Jacobs (1972) found that subjects receiving inescapable shock during pretraining significantly increased their scores on a test of mental ability from pretest to posttest, whereas scores of subjects receiving avoidable shock or no shock during pretraining remained unchanged. Roth and Bootzin (1974) found that subjects who were exposed to helplessness training in one concept formation experiment exhibited more controlling behavior in the testing phase which was presented as a second concept formation experiment than subjects who did not receive helplessness training.

Learned helplessness has been proposed as a model of depression by Seligman (1972, 1974). Seligman, Klein, and Miller (1976) have proposed that learned helplessness is a laboratory model for naturally

occurring depression in man. They have further proposed that there are helpless depressions suffered by passive individuals with negative cognitive sets about the effects of their own actions. The two most important characteristics of learned helplessness are learning impairment and passivity, and the research in this area is concerned with these characteristics.

Nondepressed students exposed to uncontrollable events in form of inescapable noise or unsolvable concept formation problems showed subsequent performance deficits when compared to nondepressed subjects exposed to controllable events or no events (Miller and Seligman, 1975). These deficits were comparable to those in people with naturally occurring depressions who had not undergone helplessness training. Miller and Seligman (1975) furthermore showed depressed subjects to be cognitively impaired relative to controls.

Another study (Miller and Seligman, 1973) focused on how the depressive views reinforcement. They found that depressed subjects perceived reinforcement as more response independent than did nondepressed subjects. The more depressed subjects were, the more they saw reinforcement as independent of response.

Reactance Theory

While learned helplessness has been found in humans (Dweck and Reppucci, 1973; Fosco and Geer, 1971; Glass and Singer, 1972; Hiroto, 1974; Hiroto and Seligman, 1975; Thornton and Jacobs, 1971), there have been several other experiments which have found the opposite

effects (Thornton and Jacobs, 1972; Roth and Bootzin, 1974). The latter experiments implied that subjects who are exposed to uncontrollable outcomes in training will exhibit less helplessness in testing than subjects not exposed. This supports Brehm's theory of psychological reactance (1966) in which he maintains that when a person's behavioral freedom is threatened, he or she will become motivationally aroused. This arousal, called reactance, leads individuals to try to restore their freedom. Wortman and Brehm (1975) have suggested that a better understanding of depression might be reached through an interpretation of learned helplessness with reactance theory.

Hammock and Brehm (1966) demonstrated that a person will experience psychological reactance when behavioral choices are eliminated or control over behaviors is threatened, only if he or she held the expectation of freedom to engage in the given behavior. The more important a particular freedom is to the individual, the more reactance he or she will experience when that freedom is threatened or taken away (Brehm and Cole, 1966). An individual will manifest more reactance if he or she believes that the particular threat has implications for the future (Brehm and Sensenig, 1966).

Reactance theory makes several predictions concerning the behavior of people subjected to uncontrollable outcomes (Wortman and Brehm, 1975). These include the following: a) that if a person's freedom to engage in certain behaviors is threatened, his/her motivation to engage in that behavior will increase; b) direct attempts to engage in the threatened or eliminated behavior will increase; c) an attempt may be made to restore behavioral freedom by engaging in an

activity which suggests by implication that the individual could engage in the threatened behavior; and d) hostility and aggression are believed to be products of the restriction of behavioral freedom.

Thus the two theories, psychological reactance and learned helplessness, appear to be at opposite ends of a continuum. While reactance theory predicts that individuals will react to loss of control by becoming hostile and aggressive towards those restricting their freedom, the learned helplessness model predicts that individuals will react with passivity. Reactance theory predicts that individuals will attempt to restore their freedom by engaging in behaviors that imply they have freedom in the area which has been threatened, while the learned helplessness model leads to the prediction that repeated exposure to uncontrollable outcomes results in learning that responses and reinforcement are independent.

Reactance and Learned Helplessness Theory

Wortman and Brehm (1975) suggest that if a person expects to have control over outcomes that are of some importance to him/her, moderate amounts of experience with helplessness should arouse psychological reactance or increase motivation to maintain control. As a person continues to experience that he/she cannot control the outcome, he/she will stop trying--helplessness results.

Glass and Singer (1972) reported an experiment in which the hypothesis was that whether or not subjects became hostile and negativistic or passive and compliant would depend on whether the

experience with bureaucracy was one over which the subject expected to maintain some control. The results of this experiment supported the hypothesis and the integrative model as well.

Roth and Kubal (1975) examined the interaction of the amount of helplessness training and the importance of the tasks in college students. Subjects were given the impression that they were simply to try to solve a concept formation task (Low Importance) or that success on the concept formation task was a good indicator of success in college (High Importance). Subjects were also assigned to various conditions of reinforcement (contingent versus varying amounts of noncontingent). As predicted by the integrative model, subjects in the high importance condition who received low amounts of helplessness training solved significantly more problems and were more persistent than subjects receiving no training. In contrast, high importance subjects receiving large amounts of helplessness training performed more poorly than the no training groups.

Depression in Blacks

Depression in Blacks is said to manifest itself differently than it does in Whites. In Blacks depression is expressed primarily in somatic symptomatology (Tonks, Paykel, and Klerman, 1970; Herman, 1974). Guilt and suicidal trends, prevalent in the White population, are less evident in Blacks. Tonks et al. (1970) explain this as being a result of Blacks' tendency to turn aggression outward. In accord with that explanation, depressed Blacks rate themselves higher

than depressed Whites on measures of hostility as well as on measures of morbid thoughts (Herman, 1974). Blacks also have been characterized as having a low expectancy that they can control their reinforcements (Lefcourt and Ladwig, 1965) and, in this regard, Steele (1975) has demonstrated a statistically significant difference between Blacks and Whites. Surprisingly, then, Tonks et al. (1970) found Blacks to have a lower score on helplessness than Whites, a finding they found rather difficult to interpret.

If the difference is real, however, it may be based on different life experiences between the groups: if life is a greater struggle for American Negroes, they may be more self-reliant and less susceptible to feelings of helplessness (p. 333).

The hypotheses for this present investigation are as follows:

1. Moderate experience with no control produces more psychological reactance (greater ability or persistence) on cognitive tasks than large amounts of experience with no control.
2. Moderate experience with no control produces more psychological reactance (greater ability or persistence) on cognitive tasks than no experience with no control.
3. Large amounts of experience with no control produces more helplessness (less ability or persistence) on cognitive tasks than moderate experience with no control.
4. Large amounts of experience with no control produces more helplessness (less ability or persistence) on cognitive tasks than no experience with no control.
5. Blacks experience more reactance than Whites in the face of large amounts of experience with no control.

METHOD

Subjects

The subjects were 80 male and female undergraduate students, 40 Blacks and 40 Whites, who were enrolled in psychology courses at a large midwestern university. The subjects participated in the experiment to partially fulfill course requirements. Within race, they were equally and randomly assigned to the following three experimental conditions: no helplessness, single helplessness and double helplessness pretraining as well as a control group which received no pretraining.

Materials

For the pretraining situation discrimination problems (Levine, 1971) were used which consisted of 3 x 5 stimulus cards, on each of which were two stimulus patterns. The stimulus patterns were composed of five different dimensions and two values associated with each dimension. The five dimensions and their associated values are as follows: a) letter--A or T, b) letter color--black or white, c) letter size--large or small, d) border shape--circle or square, and e) border number--one or two. Four different problems were presented in blocks of ten trials each. For the helplessness conditions either two or

four of the problems were insolvable for the single helplessness and for the double helplessness conditions respectively.

Five-letter anagrams chosen from a list composed by Tresselt and Mayzner (1966) printed on 3 x 5 index cards were used as the stimulus materials in the testing situation. Twenty solvable anagrams were presented to subjects in all conditions.

A stopwatch was used to measure response latency.

Procedure

Subjects were randomly assigned to the experimental groups. Each group, single helplessness, double helplessness, no helplessness, and control, contained 20 subjects, 10 Blacks and 10 Whites. Each subject was seen individually.

All subjects were introduced to the experiment in the following way:

This is an experiment in learning. You will be asked to fill out a couple of questionnaires and to solve some problems in concept formation.

Subjects in the three pretreatment groups were then given the following, somewhat revised, instructions from Hiroto and Seligman (1975):

In this experiment you will be looking at 3 x 5 index cards each of which contains two stimulus patterns. The sample patterns are composed of five different dimensions and two values associated with each dimension. [The five dimensions and associated values were then described in accordance with the above description.] Each stimulus pattern has one value from each of the five dimensions.

I have arbitrarily chosen one of the ten values as being correct. For each card I want you to choose which pattern contains this

value and I will then tell you if your choice was correct or incorrect. In a few trials you can learn what the correct value is by this feedback. The object for you is to figure out what the answer is so you can choose correctly as often as possible. At the end of the ten trials, I want you to give me, by name, the correct value.

No helplessness subjects received four solvable discrimination problems. Single helplessness subjects received two insolvable problems out of four problems which were randomly distributed across the pretreatment set. Out of four problems, double helplessness subjects received four insolvable problems, two of which were the same insolvable problems as in the single helplessness condition. A time limit of 15 seconds was set for each trial in the ten-trial block.

Following pretreatment subjects filled out a questionnaire (as used by Roth and Kubal, 1975) in which they were asked their reactions to the pretreatment. This questionnaire, included in Appendix A, was a 19-item Likert type questionnaire. The instructions for the questionnaire were as follows:

This is the end of the first part of this experiment. Indicate your responses of how you are feeling right now on a scale of 1 for never or almost never true to 7 for always or almost always true.

All subjects were then given the following instructions for the anagram test situation:

You will be asked to solve some anagrams. As you know, anagrams are words with the letters scrambled. The problem for you is to unscramble the letters as they form a word as quickly as you can. There may or may not be a pattern to finding the correct solutions. You have a time limit of 100 seconds. If at any time you cannot find a solution or if for any other reason you wish, you may request a new anagram problem. When you have reached a solution let the experimenter know by saying, "Ready." Then, state the word you believe the anagram spells.

Six dependent measures, three measures of ability and three measures of persistence, were obtained. The ability measures included number of anagrams solved, number of trials prior to criterion defined as 3 correct solutions under 30 seconds, and trial upon which subjects reached criterion. The persistence measures included number of requests for new problem anagrams, trial on which subject first requested a new problem anagram, and mean response latency.

A second questionnaire (Roth and Kubal, 1975), also included in Appendix A, was administered to all subjects following the test situation. Instructions for the questionnaire were as follows (Gody, 1978):

Now will you please fill out this questionnaire. (Like the earlier questionnaire) indicate your response of how you are feeling right now. Mark 1 for not true for me to 7 for true for me.

Upon completion of this questionnaire, subjects were debriefed and questions answered.

RESULTS

The data of this two x two x four (Race x Sex x Experience with helplessness) factorial design for each of six dependent measures were analyzed by means of the analysis of variance. The six dependent measures were three measures of ability (number of anagrams correct, trials to criterion, and number correct before criterion) and three measures of persistence (mean response latency, trial new anagram requested, and number of requests). In addition, measures regarding subjects' reactions to the pretraining and to the test situations were obtained through the use of questionnaires and were also analyzed by means of the analysis of variance.

Evaluation of Hypotheses

Effect of Varying Amounts of Control. Within the context of the factorial design, main effects for treatment groups (no helplessness, single helplessness, double helplessness, control) were computed on the six measures of ability and persistence (see Table 1). Means and standard deviations for these measures are presented in Table 1 and the ANOVA are presented in Table 2. Results of the analysis of variance on each of these six dependent variables revealed no significant main effects due to treatment condition (Single, Double, and No Helplessness, and Control). The critical values for each of the dependent variables for the main effect of experience with

TABLE 1
MEANS AND STANDARD DEVIATIONS (IN PARENTHESES)
FOR MEASURES OF ABILITY AND PERSISTENCE

Group	Number Correct	Trials to Criterion ^a	Correct Before Criteria ^a	Mean Response Latency ^b	Trial Anagram Requested	Number of Requests
Single	12.55 (4.26)	5.95 (3.26)	2.70 (0.95)	42.30 (16.77)	3.55 (4.51)	3.90 (4.06)
Double	13.05 (3.64)	7.15 (4.85)	3.50 (2.11)	43.81 (18.40)	2.30 (4.52)	2.00 (3.00)
No	12.50 (3.47)	6.85 (3.93)	3.35 (1.59)	43.57 (16.06)	2.70 (3.82)	3.70 (4.36)
Control	12.55 (3.50)	6.20 (2.87)	3.10 (0.70)	43.49 (15.77)	3.15 (3.92)	3.00 (3.49)

^aThe lower the score, the higher the ability.

^bThe lower the score, the more persistent.

TABLE 2
ANOVA FOR TREATMENT GROUPS

Dependent Variable	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Number of anagrams correct	3	1.35	0.12	0.95
Trials to criterion	3	6.21	0.48	0.70
Number correct before criterion	3	2.45	1.16	0.33
Mean response latency	3	9.16	0.04	0.99
Trial new anagram requested	3	5.88	0.35	0.79
Number of requests	3	1.47	0.97	0.41

helplessness are as follows: number of anagrams correct, $\underline{F}(3,64) = 0.12$; trials to criterion, $\underline{F}(3,64) = 0.48$; correct before criterion, $\underline{F}(3,64) = 1.16$; mean response latency, $\underline{F}(3,64) = 0.04$; trial new anagram requested, $\underline{F}(3,64) = 0.35$; number of requests, $\underline{F}(3,64) = 0.96$. Due to the lack of significance, the first and second hypotheses that moderate experience with no control produces more psychological reactance (greater ability and/or persistence) on cognitive tasks than large amounts of experience (Hypothesis 1) or no experience with no control (Hypothesis 2) were not confirmed nor were the hypotheses that large amounts of experience with no control produces more helplessness (less ability and/or persistence) on cognitive tasks than moderate experience (Hypothesis 3) or no experience (Hypothesis 4) with no control.

Effect of Race of Subject by Varying Amounts of Control. The interactions of race by treatment group for the six measures of ability and persistence are shown in Table 3. Means and standard deviations for these measures are shown in Table 4. The results of the analyses which are presented in Table 5 revealed a significant interaction in which Blacks in the Double Helplessness group took significantly more trials to reach criterion than Whites in the Double Helplessness group, $\underline{F}(3,64) = 3.23$, $p = 0.028$. The Newman-Keuls values for this difference, at the 0.01 level, were $R_{8\text{expected}} = 5.99$ and $R_{8\text{observed}} = 7.10$. Furthermore, significant results at the 0.05 level on the Newman-Keuls test were as follows: Blacks in the Double Helplessness group took significantly more trials to reach

TABLE 3
ANOVA FOR RACE BY TREATMENT GROUP INTERACTION

Dependent Variable	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Number of anagrams correct	3	23.68	2.06	0.11
Trials to criterion	3	41.68	3.23	0.03
Number correct before criterion	3	5.21	2.48	0.07
Mean response latency	3	330.11	1.36	0.26
Trial new anagram requested	3	13.70	0.82	0.49
Number of requests	3	19.69	1.29	0.29

TABLE 4

GROUP MEANS AND STANDARD DEVIATIONS (IN PARENTHESES)
FOR MEASURES OF ABILITY AND PERSISTENCE

Group	Number Correct	Trials to Criteria ^a	Correct Before Criteria ^a	Mean Response Latency ^b	Trial Anagram Requested	Number of Requests
<u>Blacks</u>						
Single	10.00 (3.70)	7.00 (3.41)	2.60 (0.92)	48.55 (14.68)	1.80 (1.66)	5.70 (4.17)
Double	10.30 (2.19)	10.70 (4.63)	4.60 (2.46)	56.41 (14.12)	2.00 (4.10)	2.70 (3.44)
No	10.70 (2.83)	7.70 (4.27)	3.70 (1.85)	49.49 (15.70)	2.40 (3.85)	4.60 (5.02)
Control	12.20 (3.22)	6.50 (2.54)	3.30 (0.64)	46.43 (15.91)	3.30 (4.00)	2.40 (2.58)
<u>Whites</u>						
Single	15.10 (3.18)	4.90 (2.74)	2.80 (0.98)	36.04 (9.70)	5.30 (5.64)	2.10 (3.01)
Double	15.80 (2.48)	3.60 (0.66)	2.40 (0.66)	31.21 (12.66)	2.60 (4.59)	1.30 (2.29)
No	14.30 (3.10)	6.00 (3.35)	3.00 (1.18)	37.65 (14.11)	3.00 (3.77)	2.80 (3.34)
Control	12.90 (3.73)	5.90 (3.14)	2.90 (0.70)	40.55 (15.07)	3.00 (3.82)	3.60 (4.13)

^aThe lower the score, the higher the ability.

^bThe lower the score, the more persistent.

TABLE 5
ANOVA FOR MAIN EFFECTS AND INTERACTIONS

Source of Variance	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Race	1	165.3	12.82	0.00066
Sex	1	17.1	1.33	0.254
Tx GP	3	6.2	0.48	0.696
Race x Sex	1	10.5	0.82	0.370
Race x Tx GP	3	41.7	3.23	0.028
Sex x Tx GP	3	1.7	0.14	0.939
Race x Sex x Tx GP	3	2.8	0.22	0.884
Error	64	12.9		

criterion than Whites in both the Single and No Helplessness and in the Control group where $R_{7\text{expected}} = 4.91$ and $R_{7\text{observed}} = 5.80$, $R_{6\text{expected}} = 4.74$ and $R_{6\text{observed}} = 4.80$, and $R_{5\text{expected}} = 4.54$ and $R_{5\text{observed}} = 4.70$, respectively. There was, however, no significant difference between the Black Double Helplessness group and the other Black treatment groups and, of the six analyses, only one was significant. Therefore, according to these data, Hypothesis 5, that Blacks experience more reactance than Whites in the face of large amounts of experience with no control, was not confirmed.

In summary, experience with varying amounts of no control did not have a significant effect on performance of solvable cognitive tasks. The race of subject by treatment group interaction did, however, reach significance on one of the dependent variables. Blacks exhibited more helplessness than Whites in the same treatment group (Double Helplessness) and, also, Blacks exhibited more helplessness than Whites in all other treatment groups (Single and No Helplessness and Control).

Feelings Questionnaire B. Questionnaire B (see Appendix A) was administered after the pretraining to the Single, Double, and No Helplessness groups. The $2 \times 2 \times 4$ factorial design analyses of variance were computed for treatment group on each question in the questionnaire (see Table 6). The means, standard deviations, and F -ratios of main effects for the treatment groups are presented in Table 7. The results of the analyses revealed significant effects due to treatment groups. Significance emerged on the following questions: Expected to

TABLE 6
ANOVA FOR TREATMENT GROUPS ON QUESTIONNAIRE B

Question	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
1. Expected to solve problems	2	8.52	7.52	0.002
2. Important to do well	2	1.52	1.33	0.28
3. Performance indicative of ability to do well in college	2	6.35	2.42	0.10
4. Confident	2	4.82	3.78	0.03
5. Felt that no matter what, couldn't solve problems	2	20.15	14.48	0.00001
6. Things beyond control	2	10.62	4.72	0.01
7. Incompetent	2	7.82	5.04	0.01
8. Thought problems insolvable	2	16.22	13.24	0.00003
9. Stressed	2	19.47	9.34	0.0004
10. Frustrated	2	26.82	12.72	0.00004
11. Bored	2	18.20	14.46	0.00001
12. Depressed	2	14.60	6.64	0.003
13. Angry	2	9.15	7.27	0.002
14. Anxious	2	2.72	1.13	0.33
15. Fatigued	2	9.80	5.27	0.01
16. Pleased about performance on task	2	35.45	28.55	0.00000
17. Certainty of having solved problems	2	28.82	29.56	0.00000
18. Unfair	2	22.82	16.11	0.00000
19. Felt friendly toward the experimenter	2	6.35	8.86	0.001

TABLE 7

MEANS, STANDARD DEVIATIONS (IN PARENTHESES), AND F RATIOS FOR
TREATMENT GROUPS ON SIGNIFICANT ITEMS ON QUESTIONNAIRE B

Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio	p	Direction of Significance
1. Expected to solve problems	4.90 (1.00)	3.95 (1.20)	5.20 (1.08)	7.52	0.0015	N = S > D
4. Confident	5.15 (1.01)	4.30 (1.42)	5.15 (1.01)	3.78	0.0013	N = S > D
5. Felt that no matter what, could not solve problems	2.20 (1.08)	3.80 (1.54)	1.95 (0.97)	14.48	0.00001	D > N = S
6. Things beyond control	2.95 (1.12)	3.80 (1.83)	2.35 (1.42)	4.72	0.0135	D = S > N
7. Incompetent	1.90 (0.94)	2.90 (1.64)	1.75 (0.99)	5.04	0.0103	D > S = N
8. Thought problems insolvable	2.45 (1.07)	3.90 (1.26)	2.25 (1.22)	13.24	0.00003	D > S = N
9. Stressed	2.75 (1.13)	4.35 (1.59)	2.55 (1.46)	9.34	0.0004	D > S = N

TABLE 7--Continued

Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio	p	Direction of Significance
10. Frustrated	3.05 (1.24)	4.65 (1.80)	2.40 (1.16)	12.72	0.00004	D > S = N
11. Bored	2.00 (1.10)	3.70 (1.38)	2.10 (1.22)	14.46	0.00001	D > S = N
12. Depressed	2.60 (1.36)	3.60 (1.62)	1.90 (1.26)	6.64	0.0029	D > S = N
13. Angry	2.50 (1.24)	3.10 (1.22)	1.75 (1.13)	7.27	0.0017	D = S > N
15. Fatigued	2.70 (1.27)	3.80 (1.50)	2.50 (1.36)	5.27	0.0085	D > S = N
16. Pleased about performance on task	4.30 (1.01)	2.75 (1.30)	5.40 (0.92)	28.55	0.0000	N > S > D
17. Certainty of having solved problems	4.55 (0.86)	2.95 (1.02)	5.30 (1.01)	29.56	0.0000	N > S > D
18. Unfair	1.85 (1.06)	3.70 (1.42)	1.85 (1.11)	16.11	0.0000	D > S = N
19. Felt friendly toward the experimenter	6.45 (0.74)	5.50 (0.92)	6.50 (0.74)	8.86	0.0005	S = N > D

solve problems, $F(2,48) = 7.52$, $p = 0.002$; Confident, $F(2,48) = 3.78$, $p = 0.03$; Felt that no matter what, couldn't solve problems, $F(2,48) = 14.48$, $p = 0.00001$; Things beyond control, $F(2,48) = 4.72$, $p = 0.01$; Incompetent, $F(2,48) = 5.04$, $p = 0.01$; Thought problems insolvable, $F(2,48) = 13.24$, $p = 0.00003$; Stressed, $F(2,48) = 9.34$, $p = 0.00037$; Frustrated, $F(2,48) = 12.72$, $p = 0.00004$; Bored, $F(2,48) = 14.46$, $p = 0.00001$; Depressed, $F(2,48) = 6.64$, $p = 0.003$; Angry, $F(2,48) = 7.27$, $p = 0.002$; Fatigued, $F(2,48) = 5.27$, $p = 0.009$; Pleased about performance on task, $F(2,48) = 28.55$, $p = 0.00000$; Certainty of having solved problems, $F(2,48) = 29.56$, $p = 0.00000$; Unfair, $F(2,48) = 16.11$, $p = 0.00000$; Felt friendly toward the experimenter, $F(2,48) = 8.86$, $p = 0.00053$.

In an effort to further partial out the variance between treatment groups, the Newman-Keuls test for significance was employed. Results indicate that the Double Helplessness group differed significantly from both the Single and the No Helplessness groups at the 0.01 level of significance. In comparison to subjects in the Single and the No Helplessness groups, the Double Helplessness subjects (1) had less expectation of solving the problems; (2) had greater feelings that no matter what, couldn't solve problems; (3) had more feelings that the problems were insolvable; (4) felt more stressed; (5) felt more frustrated; (6) felt more bored; (7) were least certain of having solved the problems; (8) had greater feelings that the problems were unfair; and (9) felt less friendly toward the experimenter. At the 0.05 level of significance the Double Helplessness group differed from both the Single and No Helplessness groups in

that they felt significantly less confident, more incompetent, and more fatigued than did the other two treatment groups. At the 0.05 level the Double Helplessness subjects had significantly greater feelings that things were beyond their control than did subjects in the No Helplessness group. The Double Helplessness group felt significantly more depressed than the No Helplessness group at the 0.01 level and the Single Helplessness group at the 0.05 level. The No Helplessness group felt significantly less angry than the Double Helplessness group at the 0.01 level and the Single Helplessness group at the 0.05 level. At the 0.01 level of significance the Double Helplessness subjects felt significantly less pleased about their performance on the task than did the Single Helplessness subjects and both the Double and the Single Helplessness subjects felt significantly less pleased about their performance than did the No Helplessness subjects. The Single Helplessness group felt significantly less certain of having solved the problems than did the No Helplessness group at the 0.05 level of significance.

In sum, the significant differences between experimental groups on Questionnaire B are in the direction the learned helplessness model would predict. That is, experience with large amounts of no control had a significant effect on feelings of helplessness about the cognitive task itself. There was much consistency in these results and, thus, they may be interpreted with a degree of confidence. As shown in Table 8, there were no significant race by treatment group interactions in the analyses.

TABLE 8

ANOVA FOR RACE BY TREATMENT GROUP INTERACTION ON QUESTIONNAIRE B

Question	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
1. Expected to solve problems	2	0.62	0.54	0.58
2. Important to do well	2	0.35	0.31	0.74
3. Performance indicative of ability to do well in college	2	5.12	1.95	0.15
4. Confident	2	0.65	0.51	0.69
5. Felt that no matter what, couldn't solve problems	2	0.72	0.52	0.60
6. Things beyond control	2	0.95	0.42	0.66
7. Incompetent	2	0.95	0.61	0.55
8. Thought problems insolvable	2	1.02	0.83	0.44
9. Stressed	2	1.80	0.86	0.43
10. Frustrated	2	0.95	0.45	0.64
11. Bored	2	1.40	1.11	0.34
12. Depressed	2	1.27	0.58	0.57
13. Angry	2	1.55	1.23	0.30
14. Anxious	2	0.62	0.26	0.77
15. Fatigued	2	0.80	0.43	0.65
16. Pleased about performance on task	2	0.95	0.77	0.47
17. Certainty of having solved problems	2	0.22	0.22	0.80
18. Unfair	2	1.05	0.74	0.48
19. Felt friendly toward the experimenter	2	0.12	0.16	0.85

Feelings Questionnaire C. Questionnaire C (see Appendix A)

was administered to the four experimental groups (Single, Double, and No Helplessness and Control groups) following the anagram test situation. Like Questionnaire B, factorial design analyses of variance which were computed on each of the questions in Questionnaire C are presented in Table 9. The means, standard deviations, and F -ratios of main effects for the treatment groups are shown in Table 10. The results of the analyses revealed significant effects due to treatment group on three questions: Fatigued, $F(3,64) = 3.45$, $p = 0.022$; Bored, $F(3,64) = 5.04$, $p = 0.003$; and Unfair, $F(3,64) = 4.21$, $p = 0.009$.

The Newman-Keuls test of significance was performed to further partial out variance between groups. First, at the 0.05 level, the Double Helplessness group felt significantly more fatigued than did the Single and the No Helplessness group ($R_{4\text{expected}} = 1.23$ and $R_{4\text{observed}} = 1.35$, and $R_{3\text{expected}} = 1.12$ and $R_{3\text{observed}} = 1.25$) and they felt more fatigued than did the Control group at approximately the 0.06 level ($R_{2\text{expected}} = 0.93$ and $R_{2\text{observed}} = 0.90$). Secondly, the Double Helplessness subjects felt significantly more bored than did the Single and the No Helplessness subjects at the 0.01 level of significance ($R_{4\text{expected}} = 1.31$ and $R_{4\text{observed}} = 1.45$ and $R_{3\text{expected}} = 1.22$ and $R_{3\text{observed}} = 1.25$) and the Control subjects at the 0.05 level ($R_{2\text{expected}} = 0.82$ and $R_{2\text{observed}} = 1.05$). Finally, the Double Helplessness subjects had significantly greater feelings that the test was unfair than did subjects in the No Helplessness group at the 0.01 level of significance ($R_{4\text{expected}} =$

TABLE 9
ANOVA FOR TREATMENT GROUPS ON QUESTIONNAIRE C

Question	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
1. Motivation during task	3	1.75	0.85	0.47
2. Confident	3	1.95	1.09	0.36
3. Feeling that no matter what, couldn't solve problems	3	1.05	0.75	0.52
4. Things beyond control	3	0.82	0.54	0.66
5. Problems insolvable	3	0.55	0.29	0.84
6. Incompetent	3	1.55	0.71	0.55
7. Systematic approach on solving problems	3	0.27	0.11	0.96
8. Wanted to do best on problems	3	1.68	1.55	0.21
9. Involved	3	1.83	1.69	0.18
10. Important to do well	3	1.71	1.18	0.33
11. Performance indicative of ability to do well in college	3	5.15	1.65	0.19
12. Aroused	3	1.67	0.70	0.55
13. Angry	3	0.08	0.04	0.99
14. Anxious	3	2.41	0.90	0.45
15. Depressed	3	3.55	1.78	0.16
16. Fatigued	3	7.55	3.45	0.02
17. Bored	3	8.57	5.04	0.003
18. Unfair	3	4.81	4.21	0.009
19. Felt friendly toward the experimenter	3	3.41	2.49	0.07

TABLE 10

MEANS, STANDARD DEVIATIONS (IN PARENTHESES), AND F RATIOS FOR
TREATMENT GROUPS ON SIGNIFICANT ITEMS ON QUESTIONNAIRE C

Question	Single Helplessness	Double Helplessness	No Helplessness	Control	F Ratio	p	Direction of Significance
16. Fatigued	2.25 (1.26)	3.60 (1.80)	2.35 (1.62)	2.70 (1.49)	3.56	0.0216	D > S = N = C
17. Bored	1.90 (1.04)	3.35 (1.56)	2.05 (1.32)	2.30 (1.45)	5.04	0.0034	D > S = N = C
18. Unfair	1.60 (0.97)	2.50 (1.20)	1.40 (0.59)	2.05 (1.32)	4.21	0.0089	C = D > N = S

1.10 and $R_{4\text{observed}} = 1.10$) and in the Single Helplessness group at the 0.05 level of significance ($R_{3\text{expected}} = 0.82$ and $R_{3\text{observed}} = 0.90$).

Analyses were computed for the race by treatment group interaction and are presented in Table 11. This interaction yielded significance on three questions of Questionnaire C. The results were as follows: Motivation during task, $F(3,64) = 3.05$, $p = 0.035$; Things beyond control, $F(3,64) = 4.41$, $p = 0.007$; and Fatigued, $F(3,64) = 3.23$, $p = 0.032$. Probing with the Newman-Keuls technique indicated that the Black Double Helplessness group was significantly less motivated at the 0.05 level than the Black Control group and the White Single, Double, and No Helplessness groups ($R_{5\text{expected}} = 1.80$ and $R_{5\text{observed}} = 1.80$). The Black No Helplessness group had significantly greater feelings that things were beyond their control than the White No and Single Helplessness groups at the 0.01 level ($R_{8\text{expected}} = 2.05$ and $R_{8\text{observed}} = 2.10$ and $R_{7\text{expected}} = 2.00$ and $R_{7\text{observed}} = 2.00$) and than the Black Control group and the White Double Helplessness group at the 0.05 level ($R_{6\text{expected}} = 1.62$ and $R_{6\text{observed}} = 1.80$ and $R_{5\text{expected}} = 1.55$ and $R_{5\text{observed}} = 1.60$). The Black Double Helplessness group felt significantly more fatigued than the White Single Helplessness group at the 0.01 level ($R_{7\text{expected}} = 2.41$ and $R_{7\text{observed}} = 2.60$) and than the Black Control and No Helplessness groups ($R_{6\text{expected}} = 1.96$ and $R_{6\text{observed}} = 2.20$), the White No Helplessness group ($R_{5\text{expected}} = 1.87$ and $R_{5\text{observed}} = 1.90$), the Black Single Helplessness group ($R_{5\text{expected}} = 1.70$ and $R_{4\text{observed}} = 1.70$), and the White Double Helplessness group

TABLE 11

ANOVA FOR RACE BY TREATMENT GROUP INTERACTION ON QUESTIONNAIRE C

Question	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
1. Motivation during task	3	6.30	3.06	0.035
2. Confident	3	1.55	0.86	0.47
3. Feeling that no matter what, couldn't solve problems	3	2.11	1.52	0.22
4. Things beyond control	3	6.70	4.41	0.007
5. Problems insolvable	3	2.70	1.40	0.25
6. Incompetent	3	0.88	0.41	0.75
7. Systematic approach on solving problems	3	1.78	0.70	0.56
8. Wanted to do best on problems	3	2.02	1.85	0.15
9. Involved	3	0.57	0.52	0.67
10. Important to do well	3	1.45	0.99	0.40
11. Performance indicative of ability to do well in college	3	3.61	1.16	0.33
12. Aroused	3	2.58	1.09	0.36
13. Angry	3	1.05	0.47	0.71
14. Anxious	3	2.51	0.94	0.43
15. Depressed	3	1.25	0.63	0.60
16. Fatigued	3	6.83	3.12	0.03
17. Bored	3	1.95	1.15	0.34
18. Unfair	3	1.05	0.91	0.44
19. Felt friendly toward the experimenter	3	0.55	0.40	0.75

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($R_{3\text{expected}} = 1.60$ and $R_{3\text{observed}} = 1.60$) at the 0.05 level of significance.

Like Questionnaire B, the significant differences between experimental groups and for the race by treatment group interaction on Questionnaire C are in the direction the learned helplessness model would predict. Again, the data suggests that subjects who experienced large amounts of no control had greater feelings of helplessness than did other subjects and that Black subjects who experienced large amounts of no control had greater feelings of helplessness than did White subjects experiencing large amounts of no control and subjects in other treatment groups. The data on Questionnaire C, however, must be interpreted with caution, if at all, due to the infrequency of significance on the questionnaire across the high number of possible instances of significance.

Other Findings of Interest

Effect of Race of Subject. The main effects for race on the six measures of ability and persistence were examined. Group means and standard deviations for these measures are shown in Table 12. Race of subject had a significant effect on four of the six dependent variables. Significance was found on all three measures of ability (number of anagrams correct, trials to criterion, and number correct before criterion) and on one measure of persistence (mean response latency). Specifically, total number of anagrams correct was greater for Whites than for Blacks, $F(1,64) = 24.17$, $p = 0.00001$. The second

TABLE 12
GROUP MEANS AND STANDARD DEVIATIONS (IN PARENTHESES)
FOR MEASURES OF ABILITY AND PERSISTENCE

Group	Number Correct	Trials to Criterion ^a	Correct Before Criterion ^a	Mean Response Latency ^b	Trial Anagram Requested	Number of Requests
Blacks	10.80 (3.17)	7.98 (4.19)	3.55 (1.81)	50.22 (15.77)	2.38 (3.64)	3.85 (4.19)
Whites	14.53 (3.37)	5.10 (2.90)	2.78 (0.95)	36.36 (13.65)	3.48 (4.70)	2.45 (3.41)

^aThe lower the score, the higher the ability.

^bThe lower the score, the more persistent.

significant effect found was the trial on which criterion was reached where Blacks took more trials to reach criterion than Whites, $F(1,64) = 12.82$, $p = 0.00066$. Third, there was a significant difference between Blacks and Whites on the number of anagrams correct prior to reaching criterion with Whites finding a pattern in the solutions in less trials than Blacks, $F(1,64) = 5.70$, $p = 0.019$. Finally, the results revealed that mean response latency was shorter for Whites than for Blacks, $F(1,64) = 15.80$, $p = 0.00018$. There were no significant differences for two of the measures of persistence--trial new anagram requested, $F(1,64) = 1.46$, $p = 0.232$ and number of requests, $F(1,64) = 2.57$, $p = 0.114$.

In summary, race of the subject had a differential effect upon measures of ability and persistence. Whites solved a total of more anagrams correctly than did Blacks and they spent less time seeking solutions for the anagrams. In addition, it took Blacks more trials to reach criterion, while Whites learned the anagram pattern in fewer trials.

Effect of Sex of Subject. Results of the analyses of variance on each of the six dependent variables revealed no significant effects due to sex. The critical values for each of the dependent variables are as follows: number of anagrams correct, $F(1,64) = 0.13$; trials to criterion, $F(1,64) = 1.33$; correct before criterion, $F(1,64) = 0.006$; mean response latency, $F(1,64) = 0.005$; trial new anagram requested, $F(1,64) = 1.73$; number of requests, $F(1,64) = 0.12$.

Feelings Questionnaire B. The analysis of Questionnaire B yielded a number of significant main effects due to race. These results appear in Table 13. Significance emerged as follows: Blacks had greater feelings than Whites that no matter what, they could not solve the problems, $F(1,48) = 4.32$, $p = 0.043$; Blacks had greater feelings than Whites that things were beyond their control, $F(1,48) = 6.67$, $p = 0.013$; Blacks had more feelings than Whites that the problems were insolvable, $F(1,48) = 5.44$, $p = 0.024$; Blacks felt more bored than Whites, $F(1,48) = 4.29$, $p = 0.044$; and Blacks felt more angry than Whites, $F(1,48) = 5.84$, $p = 0.0195$. The data, therefore, suggest that Blacks experienced more feelings of helplessness or lack of control than did Whites.

In the analyses of variance computed on each question of this questionnaire, the main effects for sex were obtained and significant results emerged on two questions. Significance were as follows: males felt more confident than females, $F(1,48) = 11.76$, $p = 0.001$; and males felt more angry than females, $F(1,48) = 5.84$, $p = 0.02$.

Significance was found for the interaction between sex of subjects and experimental group on two questions of Questionnaire B. These results were on the following questions: Felt that no matter what, could not solve problems, $F(2,48) = 3.92$, $p = 0.027$; and thought problems insolvable, $F(2,48) = 4.67$, $p = 0.014$. Probing with the Newman-Keuls technique indicated that at the 0.05 level male Double Helplessness subjects had greater feelings that no matter what, they could not solve the problems than did female No Helplessness and male Single Helplessness subjects ($R_{5\text{expected}} = 1.49$ and $R_{5\text{observed}} =$

TABLE 13

MEANS, STANDARD DEVIATIONS (IN PARENTHESES), AND F RATIOS
FOR RACIAL GROUPS ON SIGNIFICANT ITEMS ON QUESTIONNAIRE B

Question	Blacks	Whites	F Ratio	p
5. Felt that no matter what, could not solve problems	2.97 (1.49)	2.33 (1.37)	4.32	0.043
6. Things beyond control	3.53 (1.78)	2.53 (1.20)	6.67	0.013
8. Thought problems insolvable	3.20 (1.49)	2.53 (1.28)	5.44	0.024
11. Bored	2.90 (1.35)	2.30 (1.51)	4.29	0.044
13. Angry	2.80 (1.14)	2.10 (1.40)	5.84	0.0195

1.80 and $R_{4\text{expected}} = 1.40$ and $R_{4\text{observed}} = 1.50$). At the 0.01 level, female Double Helplessness subjects had greater feelings that no matter what, they could not solve the problems than did female No Helplessness ($R_{6\text{expected}} = 1.89$ and $R_{6\text{observed}} = 2.80$), male Single Helplessness ($R_{5\text{expected}} = 1.82$ and $R_{5\text{observed}} = 2.50$), male No Helplessness ($R_{5\text{expected}} = 1.74$ and $R_{4\text{observed}} = 1.90$), and female Single Helplessness ($R_{\text{expected}} = 1.62$ and $R_{3\text{observed}} = 1.70$) subjects. The male Double Helplessness group had greater feelings at the 0.05 level that the problems were insolvable than the male No Helplessness group ($R_{3\text{expected}} = 1.20$ and $R_{3\text{observed}} = 1.50$). Furthermore, at the 0.01 level of significance the female Double Helplessness group had greater feelings that the problems were insolvable than did the female No Helplessness ($R_{5\text{expected}} = 1.73$ and $R_{5\text{observed}} = 2.60$) and the male Single Helplessness ($R_{4\text{expected}} = 1.65$ and $R_{4\text{observed}} = 2.20$) groups and the male Double Helplessness group had greater feelings that the problems were insolvable than did the female No Helplessness ($R_{4\text{expected}} = 1.65$ and $R_{4\text{observed}} = 1.80$) group.

Significance was also found for the interaction between race of subjects, sex of subjects, and experimental group on two questions of Questionnaire B. These results were as follows: Expected to solve problems, $F(2,48) = 4.28$, $p = 0.019$; and Bored, $F(2,48) = 4.82$, $p = 0.012$. Probing with the Newman-Keuls technique indicated that Black female Double Helplessness group had significantly less expectations of solving the problems than did the White male No Helplessness ($R_{9\text{expected}} = 2.59$ and $R_{9\text{observed}} = 3.00$) and the Black male

Single Helplessness ($R_{8\text{expected}} = 2.53$ and $R_{8\text{observed}} = 2.60$) groups at the 0.01 level; and than did the Black female No Helplessness and the White female Single Helplessness ($R_{7\text{expected}} = 2.06$ and $R_{7\text{observed}} = 2.40$), the White female No Helplessness ($R_{6\text{expected}} = 1.98$ and $R_{6\text{observed}} = 2.20$), the Black male No Helplessness and the White female Double Helplessness ($R_{5\text{expected}} = 1.90$ and $R_{5\text{observed}} = 2.00$), and the White male Single Helplessness ($R_{4\text{expected}} = 1.78$ and $R_{4\text{observed}} = 1.80$) groups at the 0.05 level of significance.

The White male Double Helplessness group felt significantly more bored than did the White female Single Helplessness ($R_{10\text{expected}} = 2.80$ and $R_{10\text{observed}} = 3.60$), the White female and the White male No Helplessness ($R_{9\text{expected}} = 2.75$ and $R_{9\text{observed}} = 3.40$), the White male Single Helplessness ($R_{8\text{expected}} = 2.70$ and $R_{8\text{observed}} = 3.20$), the Black male Single Helplessness and the Black female No Helplessness ($R_{7\text{expected}} = 2.64$ and $R_{7\text{observed}} = 3.00$), and the White female Double Helplessness ($r_{6\text{expected}} = 2.56$ and $R_{6\text{observed}} = 2.60$) groups at the 0.01 level; and than did the Black female Single Helplessness ($R_{5\text{expected}} = 2.02$ and $R_{6\text{observed}} = 2.20$) group at the 0.05 level. The Black female Double Helplessness group felt significantly more bored at the 0.05 level than did the White female Single Helplessness ($R_{9\text{expected}} = 2.32$ and $R_{9\text{observed}} = 2.60$), the White female and male No Helplessness ($R_{8\text{expected}} = 2.26$ and $R_{8\text{observed}} = 2.40$), and the White male Single Helplessness ($R_{7\text{expected}} = 2.20$ and $R_{7\text{observed}} = 2.20$) groups.

Feelings Questionnaire C. The analysis of Questionnaire C yielded significant effects for racial groups on five questions. These results are shown in Table 14. Significance emerged as follows: Whites were significantly more motivated during the task than were Blacks, $F(1,64) = 6.21$, $p = 0.015$; Blacks had greater feelings than Whites that no matter what, they could not solve the problems, $F(1,64) = 11.04$, $p = 0.002$; Blacks had greater feelings than Whites that things were beyond their control, $F(1,64) = 13.17$, $p = 0.0006$; Blacks felt more bored than did Whites, $F(1,64) = 4.97$, $p = 0.027$; and Blacks had greater feelings than Whites that the test was unfair, $F(1,64) = 3.95$, $p = 0.051$. The data, therefore, suggest that Blacks experienced more feelings of lack of control or helplessness than did Whites.

The analyses of variance were computed on each question in Questionnaire C and the main effects for sex were obtained. Significant results emerged on the following questions: males felt more confident than did females, $F(1,64) = 5.86$, $p = 0.018$; and females felt more fatigued than did males, $F(1,64) = 3.86$, $p = 0.053$.

Summary of Results

The amount of experience with uncontrollable outcomes did not produce significant effects in subjects on the six measures of ability and persistence. Thus, the hypotheses that moderate experience with no control produces more psychological reactance on cognitive tasks than large amounts of experience or no experience with no

TABLE 14

MEANS, STANDARD DEVIATIONS (IN PARENTHESES), AND F RATIOS
FOR RACIAL GROUPS ON SIGNIFICANT ITEMS ON QUESTIONNAIRE C

Question	Blacks	Whites	F Ratio	p
1. Motivation during task	4.83 (1.63)	5.63 (1.20)	6.21	0.015
3. Feeling that no matter what, could not solve problems	3.20 (1.31)	2.33 (1.15)	11.04	0.0015
4. Things beyond control	3.18 (1.41)	2.18 (1.16)	13.17	0.0006
17. Bored	2.73 (1.47)	2.08 (1.41)	4.97	0.029
18. Unfair	2.13 (1.29)	1.65 (0.91)	3.95	0.051

control and that large amounts of experience with no control produces more helplessness on cognitive tasks than moderate experience or no experience with no control were not supported. The race by treatment group interaction produced significance on only one of the six dependent measures, namely number of trials to criterion. However, this significant effect was in the opposite direction than predicted. This finding indicated that Blacks took significantly more trials to reach criterion than did Whites in the face of large amounts of experience with no control. Thus, the hypothesis that Blacks experience more reactance than Whites in the face of large amounts of experience with no control was not supported.

Race of the subject did have a differential effect upon four of the six dependent measures. However, there were no significant effects due to sex.

The behavioral measures did not provide significant support for the hypotheses. Likewise, post-experimental questionnaires provided no such support. Results from both Questionnaire B and Questionnaire C showed significance due to treatment group, but they were in support of the learned helplessness theory that large amounts of experience with no control should arouse feelings of helplessness and decreased motivation. The race by treatment group interaction produced no significance on Questionnaire B, but produced some significance on Questionnaire C, though in the opposite direction than predicted.

Results on both questionnaires were significant due to race and sex as well. Finally, on Questionnaire B significant results emerged for the interaction between sex of subjects and experimental group.

DISCUSSION

The Reactance-Learned Helplessness Model

According to Wortman and Brehm's theory of reactance-learned helplessness, if an individual has an expectation of control over an outcome of some importance to him or her, moderate amounts of experience with no control should arouse psychological reactance, while continued experience with no control will result in helplessness. The results obtained in the present study were not consistent with these predictions. Subjects exposed to moderate amounts of experience with helplessness, in the form of two insolvable problems out of a set of four discrimination problems, did not demonstrate psychological reactance as measured by increased scores of ability and persistence on twenty solvable anagrams. Furthermore, subjects exposed to large amounts of experience with helplessness, in the form of four insolvable problems out of a set of four discrimination problems, did not demonstrate helplessness as measured by decreased scores of ability and persistence on twenty solvable anagrams.

On Questionnaire B which was administered following the pre-training of the single, double, and no helplessness groups significant effects due to treatment group emerged. The results indicated that, although the treatment group had no significant effect on the measures of ability and persistence, assignment to treatment group did have a significant effect on subjects' affective and cognitive states. The

analyses of Questionnaire B show that the three treatment groups differed from one another at the 0.01 level of significance in regards to how pleased they were about their performance on the discrimination tasks. In other words, subjects in the double helplessness group were significantly less pleased about their performance than the other two treatment groups and the subjects in the no helplessness group were significantly more pleased about their performance than were the other two treatment groups. These results support the prediction of the reactance-learned helplessness model of depression.

The results of the analyses of Questionnaire B further indicate that the double helplessness group differed significantly from the single and the no helplessness groups on questions stating that they felt less in control of the situation, less competent, less confident, more stressed, and more frustrated. In addition, increases in helplessness training resulted in continually increasing feelings of anger, fatigue, boredom, unfairness, depression, and insolvability of problems and in decreasing feelings of friendliness toward the experimenter, certainty of having solved problems, and expectation of solving problems. These results suggest that the amount of experience with no control corresponded to the impact of the pretreatment situation as shown in the subjects' self-report questionnaire regarding affective and cognitive states. Thus, they support predictions made by the learned helplessness model, but not those made by the reactance-learned helplessness model.

On Questionnaire C which was administered following the test situation to the single, double, and no helplessness groups and to the

control group several significant effects due to treatment group emerged. The analyses of Questionnaire C show that the double helplessness group differed significantly from the other three treatment groups on the questions "Fatigued" and "Bored" and from the single and no helplessness groups on the question "Unfair." These results clearly support the learned helplessness phenomenon, but give no support to the reactance-learned helplessness model.

This study did not unequivocally support Wortman and Brehm's reactance-learned helplessness model of depression. While significance was found on both Questionnaire B and Questionnaire C in the direction of helplessness, no significance was found on the measures of ability and persistence. This, of course, raises the question of why the hypothesis regarding the curvilinear relationship between experiences of no control and behavioral manifestations of helplessness was not supported. The following are possible explanations for the results of this study: 1) laboratory methodology, 2) amount and duration of helplessness training and the resultant impact of the experiences of no control, 3) subjects' initial expectations of control, and 4) importance of the outcome.

The laboratory methodology may be an issue in this study as the use of cognitive tasks, such as discrimination problems and anagrams, may not be a valid test of this or any model of depression. The laboratory is an artificial situation in which it is difficult, if not impossible, to create an exact analogue of a real life situation. In addition, it is questionable as to whether or not generalizations can be made about real life from laboratory studies.

According to Wortman and Brehm's theory, moderate amounts of no control or large amounts of no control cause reactance or helplessness, respectively. In many laboratory studies, including this study, these conditions are produced through the use of insolvable discrimination problems, insolvable anagrams, or uncontrollable noise, but these situations may not be, and probably are not, equivalent to flunking out of college, to having an incurable illness, or to the death of a loved one and, thus, brings to question the validity and/or applicability of this laboratory model/theory of depression. Furthermore, real life stresses occur as singular experiences within the context of other life influences, whereas this study and other laboratory studies occur as isolated experiences which have no relationship to real life events. Buchwald, Coyne, and Cole (1978) have suggested that demonstration that a procedure can produce some features of a disorder in the laboratory is not sufficient to demonstrate the etiology of the disorder. In other words, not only may laboratory studies not correspond to real life, but, even if the laboratory study achieves the desired effects--in this case, reactance and helplessness, the results will not necessarily give us a better understanding of the underlying causes of depression.

A second explanation as to why this study did not support the Wortman and Brehm theory may have been related to the amount and duration of helplessness training and, as a result, the impact of that experience with no control. In their experiments, Glazer and Weiss (1976a, 1976b) showed that rats experience an interference with learning as a result of inescapable shocks of long duration and at

least moderate intensity. The shocks in their second study were of five second duration, having found in their previous study that only those experiences of no control of five seconds or longer resulted in subjects showing a subsequent interference effect. Therefore, they concluded that the duration of helplessness training is critical in causing interference effects with subjects' capacity for learning. In addition, the intensity, amount, or strength of the helplessness training is an important factor as well.

In this study the pretraining situation consisted of a total of four Levine discrimination problems with two insolvable problems for the single helplessness condition and four insolvable problems for the double helplessness condition. Although times have been reported for animal studies, times have not generally been reported for human studies. The duration of the experiences of varying amounts of no control in this study was not specifically timed, but ranged from approximately 120 seconds to approximately 600 seconds. It is uncertain whether the duration of the experiences was a factor.

Along with the duration of experience with no control comes the intensity or strength of the helplessness training and the resultant impact. Roth and Bootzin (1974) offered as an explanation for not getting the hypothesized results in their study that the manipulations were not strong enough to produce the desired effect. They further suggested that the experiences producing expectancies of external control may differ in impact and, depending on the impact, different behavioral results would be expected. If the helplessness experience were intense/strong, subjects would report such on Questionnaire B

through questions regarding such feelings as stress, frustration, incompetence, and lacking control. As aforementioned, there were significant differences in the way subjects responded to these questions. The double helplessness group felt more stressed, more frustrated, more incompetent, and less in control than did the single helplessness and no helplessness groups. However, there was no significant difference between the single helplessness and the no helplessness groups which indicates that, while the manipulations may have been strong enough to produce a differential effect in the double helplessness group, the manipulations were not strong enough to produce a differential effect between the single helplessness and the no helplessness groups. Thus, in regards to strength/intensity, four insolvable discrimination problems may have produced only moderate feelings of helplessness, thereby causing the double helplessness group to tend towards reactance, i.e., greater number of anagrams correct, than the other treatment groups. On the other hand, two insolvable problems, in contrast to no insolvable problems, were virtually inconsequential in producing feelings of no control.

Hortman and Brehm (1975) state that theoretically psychological reactance should be aroused if a person expects to be able to control or influence outcomes that are of some importance to him/her and finds those outcomes to be uncontrollable. In this experiment the results of the question "Expected to solve problems" on Questionnaire B reveal that there was no significant difference between the single helplessness and the no helplessness groups--the mean score for these two groups was 5.05 on a scale of 1 for "Never True" to 7 for "Always

True." In other words, both these treatment groups reported that they expected to solve the discrimination problems. However, there was a differential effect between the double helplessness group and the single helplessness and the no helplessness groups, where the mean score for the double helplessness subjects was 3.95, indicating that they, more often than not, did not expect to solve the discrimination problems.

It must be noted that the questionnaire was administered following the pretraining and, thus, the fact that the double helplessness group had solved fewer of the problems may have influenced their report of what their expectations were during the pretraining situation. In view of the fact that they did not solve any of the problems correctly, their after-the-fact feelings were that they had not really expected to get them right in the first place. Despite this, as reported above, the double helplessness group tended to get more anagrams correct, one of the measures of ability and persistence, than the other groups. Perhaps this was due to the fact, as proposed by Roth and Bootzin (1974), that induced expectancy of external control actually facilitated controlling behavior.

The second most critical theoretical construct is the importance of the uncontrollable outcome (Wortman and Brehm, 1975). Subjects in this experiment indicated that the tasks were of such importance to them that they wanted to do well. There was no differential effect between any of the treatment groups regarding importance. On Questionnaire B the mean score for all three groups on the question "Important to do well" was 5.73 on a scale of 1 for "Never

True" to 7 for "Always True." On Questionnaire C the mean scores for the treatment groups were as follows: "Motivated" = 5.23, "Wanted to do best on problems" = 6.08, "Involved" = 5.90, and "Important to do well" 5.76. Thus, it appears to be unlikely that the importance of outcome accounts for the lack of significance on the measures of ability and persistence.

Another important consideration in the lack of significance on the ability and persistence measures is the use of cognitive tasks in both the pretraining and the test situations. Hiroto and Seligman (1975) used the Levine (1971) discrimination problems for the pretraining and Tresselt and Mayzner (1966) anagrams for the test situation. They initially used three insolvable Levine discrimination problems and twenty solvable anagrams for the helplessness subjects in their experiment and found no significant effects. They, then, did the experiment again increasing the insolvable discrimination problems to four. As a result, significance was found in that the helplessness group was debilitated at solving later anagrams relative to the other treatment groups. It was, thus, concluded that helplessness could be produced within cognitive tasks. Here, then, the amount (strength) seemed to have been the issue and not the task itself. Similarly, that conclusion can be drawn in this experiment as well.

Finally, Maier and Seligman (1976) have suggested that some measures for assessing learned helplessness are insensitive to behavioral deficits. This experiment showed a number of significant differences due to treatment group on affective and cognitive states, but not on behavioral manifestations of helplessness as assessed by

the ability and persistence measures. The question, then, may be raised as to whether or not the behavioral measures were adequate. Roth and Bootzin (1974) used dependent measures which were similar to those used in this study and, although they found significant differences in ratings of affect, they did not find significant differences in the measures of ability and persistence. There have been other studies (Hiroto and Seligman, 1975; Miller and Seligman, 1975; Roth and Kubal, 1975), however, which have successfully used similar dependent measures to assess behavioral deficits due to treatment effect.

Wortman and Brehm's reactance-learned helplessness model of depression is still only a theory of how people respond to experiences of varying amounts of no control and, obviously, much more research must be done to test its hypotheses.

Differences between Blacks and Whites

It was hypothesized that Blacks would experience more reactance than Whites in the face of large amounts of experience with no control. In other words, Blacks in the Double Helplessness group would manifest more reactance as shown in the measures of ability and persistence than would Whites in the same experimental group. This prediction was based largely on the explanation of Tonks et al. (1970) for finding less helplessness in Blacks than in Whites. Blacks have had to endure tremendous hardships and struggle against extreme odds to accomplish what Whites have been able to take for granted. In view

of this, it was expected that, although Blacks may initially feel defeated—that they have no control, they will persist in an effort to gain control.

As indicated above, there were no significant differences between treatment groups as measured by ability and persistence scores. However, the results of the analyses did reveal a significant interaction on one of the six measures of ability and persistence. Blacks in the Double Helplessness group took significantly more trials to reach criterion than Whites in the Double Helplessness group, but this significance was in the opposite direction than had been predicted. That Blacks took more trials to reach criterion than Whites indicates that Whites learned the pattern in the solutions more quickly than Blacks. Furthermore, Blacks in the Double Helplessness group took significantly longer to learn the anagram pattern than Whites in all other treatment groups as well, though there was no significant difference between this group and other Black treatment groups. No significance was found on the other five persistence and ability measures. Thus, no support was found for the hypothesized difference between Blacks and Whites.

Significant racial differences did emerge on four of the ability and persistence measures. Whites, in comparison to Blacks, had more anagrams correct, took less trials to reach criterion, took less trials to find a pattern in the solutions, and had a shorter mean response latency. Thus, Blacks, regardless of experimental group, performed more poorly than Whites as measured by ability and persistence scores. As aforementioned, Blacks have been characterized as

having a low expectancy that they can control their reinforcements (Lefcourt and Ladwig, 1965; Steele, 1975). In other words, it has been found that Blacks believe that responses and reinforcements are independent. The results of this study are, thus, more consistent with these findings and suggest that, despite a history of hardships and struggle, or perhaps because of it, Blacks behave as though they do not have total control over their destinies.

This may be particularly true at this time as this is the time of the Bakke decisions and charges of reverse discrimination. Blacks are feeling, now more than ever, that injustices will not be righted, regardless of what they do. It is very likely that Blacks entered the experimental situation recognizing that they were required to participate in the experiment to receive credits in their introductory psychology class and that, if they wanted to get a good grade in the course, they had no choice but to participate. Thus, unlike Whites who participated under the same circumstances, Blacks may have seen the experimental situation as another in a series of uncontrollable events they encounter in their daily lives and responded accordingly.

Another reason for the results obtained may be related to the sample of Black students in this study. Virtually all of the Black students were from Chicago and the products of the Chicago public schools. These schools are well known for graduating students who are unable to read or, at least, who read at a very low level. This is especially true of schools in the "ghetto" and in Black neighborhoods. Anagrams, or scrambled words, were used in the test situation of this experiment and it follows that if students have difficulty

reading, they will have difficulty performing on word recognition tasks. In other words, you cannot unscramble words if you do not know the words in the first place, if they are not a part of your repertoire.

Further, in regards to the sample of Black students in this experiment, an additional factor must also be considered. A number of the Black students enrolled in the introductory psychology classes are students admitted to the university through a program called the Educational Opportunity Program. Within this program, a student's SAT or ACT scores are not major criteria for admission. These scores are, in fact, generally lower than those of students admitted through the standard admission procedure. Thus, it is likely that students so selected would not perform as well on a word recognition task.

Implications for Future Research

Although there were no significant differences between groups on the measures of ability and persistence, data from the questionnaires suggested that relationships do exist between race and how subjects are affected by and deal with uncontrollable outcomes. Because such research has not been done previously, more experimental validation is needed. In addition, in terms of cognitive and affective states, data from the questionnaires supported the learned helplessness phenomenon, while giving no support to reactance theory. Thus, further experimental validation of the reactance-learned

helplessness theory is necessary, particularly in regards to manifest behavior.

Changes in the design used in the present experiment may be helpful in studying this theory. Specifically, as noted above, the amount and duration of helplessness training may not have been enough to have had the desired impact in the subsequent test situation. The total number of Levine discrimination problems should be doubled (increased to eight), such that the single helplessness group would have four insolvable problems out of a total of eight problems, the double helplessness group would have eight insolvable problems, and the no helplessness group would have eight solvable problems. Not only would this increase the amount of helplessness training, but it would, at the same time, increase the length of time or the duration of the helplessness training. This would better insure that the pretraining would be aversive enough to have an effect on the ability and persistence measures, as well as on cognitive and affective states.

A second methodological change would be to eliminate the use of anagrams entirely and to replace them with a cognitive task, similar to the Levine discrimination problems, which is not as academically oriented as are anagrams. Another set of Levine discrimination problems may even be used for the test situation. This would eliminate the initial panic that subjects may have felt when instructed that they would have to unscramble letters to form words. Common responses across both races and experimental groups were "Oh, no" and "I'm not too good at this." Discrimination problems, or the like, would allow all subjects the expectation that they can successfully

solve the problems. Furthermore, this change would, in some ways, rectify the sampling problem as well. While the sample of students may be the same, verbal skills level would not have a direct effect on performance in the test situation.

The reactance-learned helplessness model of depression lends itself to other laboratory studies as well as to the area pursued in the present investigation. A laboratory study that may be fruitful is a repeated measures study where ability and persistence scores are gathered at different time intervals following helplessness training. Such a study would be helpful in assessing the lasting effects, if any, of helplessness training. It would also be interesting to study the simultaneous manipulation of expectancy for control, the importance of outcome, and experience with helplessness. The present investigation studied only Blacks and Whites, but another study that may give us some insight into the differences and likenesses of various races of people would be to include other oppressed minorities, i.e., Hispanics and Native Americans, as well as Asian Americans. Finally, it would be interesting to study the reactance-learned helplessness model across various age groups.

As noted previously, the laboratory is an artificial situation in which it is difficult to create an exact analogue of a real life situation and, thus, to make generalizations about real life. Therefore, the most logical area of research is to study individuals and their responses to naturally occurring events which are uncontrollable. Such events would include loss of a loved one by death and failure through the loss of a job.

Research in the area of reactance and learned helplessness does have some implications regarding the diagnosis and treatment of depression. Throughout the helplessness literature is the assumption that helpless behavior is maladaptive. Therefore, researchers have begun to focus on the modification of such behavior. For example, Seligman (1974) advocates "immunization training" where individuals are made more resistant to learned helplessness by making clear to them that they have control over outcomes in their lives. Wortman and Brehm (1975), on the other hand, argue that individuals should be taught to discriminate between situations where they have control and those where they do not have control since there do, indeed, exist situations where individuals have absolutely no control. They should then be taught coping strategies for both types of situations.

In addition, if there truly are racial differences due to cultural effects which influence individuals' responses to events over which they have no control, then there are further implications for treatment. With their cultural backgrounds or uniqueness due to race in mind, individuals may be taught to better their coping skills such that they can develop the ability to tolerate feelings of helplessness and to not permit these feelings to generalize to all situations.

SUMMARY

The present investigation was done in an attempt to experimentally validate Wortman and Brehm's (1975) reactance-learned helplessness model of depression. Racial differences and the effects of varying amounts of experience with helplessness over uncontrollable outcomes on performance of concept formation problems were also examined.

The subjects included 80 male and female undergraduate students, 40 Blacks and 40 Whites. They were equally and randomly assigned to one of the following treatment groups: No Helplessness, Single Helplessness, Double Helplessness, and Control. In the pretraining Single Helplessness subjects received two of four insolvable Levine discrimination problems, Double Helplessness subjects had all four insolvable problems, and No Helplessness subjects had all four solvable problems. Control subjects received no pretraining. All subjects were given 20 solvable anagrams in the test situation. Ratings of cognitive and affective states were collected on all subjects following the pretraining and the test situations.

Results indicated no significant differences between experimental groups on measures of ability and persistence. Significance emerged for the race by treatment group interaction on trials to criterion, a measure of ability. Blacks in the Double Helplessness group took more trials to reach criterion than Whites in the Double

Helplessness group at the 0.01 level of significance and Whites in the other three experimental groups at the 0.05 level of significance.

Race of subject had a significant effect on all three measures of ability (number of anagrams correct, trials to criterion, and number correct before criterion) and on one measure of persistence (mean response latency). Whites solved a total of more anagrams correctly than did Blacks and they spent less time seeking solutions for the anagrams. Furthermore, it took Blacks more trials to reach criterion, while Whites learned the anagram pattern in fewer trials. No significant effects due to sex emerged.

Data from the questionnaires supported predictions made by the learned helplessness model. Experience with large amounts of no control had a significant effect on feelings of helplessness. In addition, the data from the questionnaires suggested that Blacks experience more feelings of helplessness or lack of control than did Whites.

The results were discussed in terms of the learned helplessness phenomenon as well as the reactance-learned helplessness model. In addition, the effect of race of subjects and experience with varying amounts of control was evaluated. Finally, implications for future research were discussed.

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APPENDIX A

QUESTIONNAIRE B

Indicate your responses of how you are feeling right now on a scale of 1 for Never True to 7 for Always True. Circle your choices and be sure that all check marks are directly across from the items to which they correspond.

	Never true	Almost Never True	Usually Not True	Sometimes True, Sometimes Not True	Usually True	Almost Always True	Always True
1. Expected to solve problems	1	2	3	4	5	6	7
2. Important to do well	1	2	3	4	5	6	7
3. Performance indicative of ability to do well in college	1	2	3	4	5	6	7
4. Confident	1	2	3	4	5	6	7
5. Felt that no matter what, couldn't solve problems	1	2	3	4	5	6	7
6. Things beyond control	1	2	3	4	5	6	7
7. Incompetent	1	2	3	4	5	6	7
8. Thought problems insolvable	1	2	3	4	5	6	7
9. Stressed	1	2	3	4	5	6	7
10. Frustrated	1	2	3	4	5	6	7
11. Bored	1	2	3	4	5	6	7
12. Depressed	1	2	3	4	5	6	7
13. Angry	1	2	3	4	5	6	7
14. Anxious	1	2	3	4	5	6	7
15. Fatigued	1	2	3	4	5	6	7
16. Pleased about performance on task	1	2	3	4	5	6	7
17. Certainty of having solved problems	1	2	3	4	5	6	7
18. Unfair	1	2	3	4	5	6	7
19. Felt friendly toward the experimenter	1	2	3	4	5	6	7

QUESTIONNAIRE C

Indicate your responses of how you are feeling right now on a scale of 1 for Never True to 7 for Always True. Circle your choices and be sure that all check marks are directly across from the items to which they correspond.

	Never True	Almost Never True	Usually Not True	Sometimes True, Sometimes Not True	Usually True	Almost Always True	Always True
1. Motivation during task	1	2	3	4	5	6	7
2. Confident	1	2	3	4	5	6	7
3. Feeling that no matter what, couldn't solve problems	1	2	3	4	5	6	7
4. Things beyond control	1	2	3	4	5	6	7
5. Problems insolvable	1	2	3	4	5	6	7
6. Incompetent	1	2	3	4	5	6	7
7. Systematic approach on solving problems	1	2	3	4	5	6	7
8. Wanted to do best on problems	1	2	3	4	5	6	7
9. Involved	1	2	3	4	5	6	7
10. Important to do well	1	2	3	4	5	6	7
11. Performance indicative of ability to do well in college	1	2	3	4	5	6	7
12. Aroused	1	2	3	4	5	6	7
13. Angry	1	2	3	4	5	6	7
14. Anxious	1	2	3	4	5	6	7
15. Depressed	1	2	3	4	5	6	7
16. Fatigued	1	2	3	4	5	6	7
17. Bored	1	2	3	4	5	6	7
18. Unfair	1	2	3	4	5	6	7
19. Felt friendly toward the experimenter	1	2	3	4	5	6	7

APPROVAL SHEET

The thesis submitted by Sandra Elveta Lowe has been read and approved by the following committee:

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Associate Professor, Psychology, Loyola

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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

January 18, 1980
Date

James E. Johnson
Director's Signature