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ATTRIBUTIONS OF PERFORMANCE ASSOCIATED WITH LEARNED HELPLESSNESS AND THE EFFECT OF EXTRINSIC REINFORCEMENT IN LEARNING DISABLED AND NON-LEARNING DISABLED CHILDREN

The University of Oklahoma PH.D. 1981

THE UNIVERSITY OF OKLAHOMA

Graduate College

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A Dissertation

Submitted To The Graduate Faculty
in partial fulfillment of the requirements for the
degree of

Doctor of Philosophy

by
Sandra Elaine Johnson
Norman, Oklahoma
1981

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AND THE EFFECT OF EXTRINSIC REINFORCEMENT
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APPROVED BY

DISSERTATION COMMITTEE

"The fear of the Lord is the beginning of wisdom." (Proverbs 1:10)

This part of the journey towards wisdom is ended. During the journey I have had the privilege of experiencing a variety of encounters with various individuals who will always remain close in my thoughts and my heart. To these individuals I offer my utmost appreciation for their help, time and sustenance.

To Bill Graves, Tillman Ragan, Jack Kanak and Chipman Stuart, members of my doctoral committee, I express my gratitude for their interest and wisdom.

To George Letchworth, chairman and friend, I offer deep gratitude for his faith and dedication towards this commitment.

To my children, Melanie and Billy Bruce, I am indeed indebted for their patience and daily help in many responsibilities that considerably lightened my load.

To Bruce, my husband, who first encouraged me to begin and then provided love and support as long as he lived so that this challenge could be met. I only wish he could have lived to see it completed.

To Bruce, I dedicate this effort towards wisdom.

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PERFORMANCE AND ATTRIBUTIONS OF LEARNING DISABLED AND NON-LEARNING DISABLED CHILDREN UNDER CONDITIONS OF LEARNED HELPLESSNESS AND REINFORCEMENT

Academic deficiencies as well as other areas of poor performance often manifest themselves in children labeled learning disabled. Previously identified as emotionally disturbed or unmotivated, children with learning disabilities have long occupied the attention of parents and educators who sought the cause for these deficiencies.

A definition of learning disabilities often depends upon the field of interest of the professional, whether medical, psychological or educational. The medical model leans heavily on terms involving cerebral dysfunction while psychological and educational definitions emphasize behaviors readily observable, with some possibility of remediation.

Public Law 94-142 provides a definition currently being used as the basis for establishing the criteria for meeting the needs of the learning disabled child in the public schools. "Specific learning disability" is defined as ". . . a disorder in one or more of the psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term does not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps, of mental retardation, of

emotional disturbance, or of environmental, cultural, or economic disadvantage."

Hallahan and Cruickshank (1961) described learning disabled children as deficient in perceptual processing skills evidenced by left-right confusion, uncertain body images and weakness in spatial orientation. One characteristic often cited is a severe limitation of attention span (Cruickshank, 1966; Torgeson, 1977; Hagen and Hale, 1973). The learning disabled child experiences difficulty with attentional processes, finding it difficult to discriminate between relevant and irrelevant information (Kagan, 1965). However, Hallahan (1975) suggested that learning disabled children perform poorly on tasks measuring selective attention because the ability to attend is more cognitive than perceptual.

Gaddes (1975) suggested that the learning problems evident in the learning disabled student might consist of three major areas of deficient performance: (1) constitutional; (2) psychological; and (3) social. The constitutional deficiency might not become apparent until the child enters school, at which time the cognitive handicap manifests itself in learning difficulties. As the child becomes frustrated at not being able to match the educational performance of other children, secondary or psychological problems begin to present themselves. These frustrations then become social problems as the child resorts to defensive strategies for self-protection and for gaining control over life space.

Heider (1958) presented a motivational system based on the cognitions of the person performing a task. He emphasized dispositional properties which lead individuals to explain their

own performance as being the result of effective personal (can) and environmental (try) forces. Heider's model forms a basis for research conducted by Dweck, et al (1973, 1975, 1978).

Mercer, Cullinan, Hallahan and LaFleur (1975) reported that higher I.Q. learning disabled children performed less well on a learning task than did lower I.Q. (mentally retarded) children. They suggest a motivation construct should be considered as a possible causal factor in the distractivity and lowered performance of the learning disabled child.

Keogh and Donlon (1972) observed that the performance of severe learning disabled children became increasingly poorer across learning trials while normal children tended to improve. The consistency of lowered performance was an intriguing finding, raising an additional question as to whether motivational or affective components of task performance might be interacting with perceptual deficits.

Performance deterioration in learning disabled children over subsequent trials, especially if ability to perform appears adequate, bears striking resemblance to the "learned helplessness" construct introduced by Seligman and Maier (1967). In a review of the literature, Thomas (1979) hypothesized that the failure-laden histories of the learning disabled child suggest a learned helplessness conditioning and that a closer examination of this hypothesis is warranted.

Social learning theory and studies by Rotter (1966) provide the theoretical background for the learned helplessness model. In social learning theory, a reinforcement provides the expectancy

for that event to be reinforced in the future. Failure to reinforce serves to diminish or extinguish that expectancy. Rotter hypothesized that when the subject perceives the reinforcement as not contingent upon the subject's own behavior, the expectancy for future reinforcement will decrease. He also hypothesized that an individual's history of reinforcement would contribute to the degree in which reinforcement for an action would be attributed.

In 1967, Seligman and Maier conducted a series of experiments on animals involving failure to escape traumatic shock, in which they found that independence between events also produces learning different from that produced by acquisition and extinction. Inescapable aversive events presented to human subjects were also found to interfere with later instrumental learning (Thornton, 1971; Thornton and Jacobs, 1971; Hiroto, 1974). Earlier studies used aversive events which involved insult to the senses, such as electric shock or loud noise, to induce the helplessness condition. Hiroto and Seligman (1975) and Cohen, Rathbart and Phillips (1976), attempting to more closely replicate a normal setting, used insoluble cognitive problems presented to subjects to produce learned helplessness analogous to that acquired previously through aversive reinforcement.

Abramson, Seligman and Teasdale (1978) suggested that learned helplessness results in three outcomes--motivational, cognitive, and emotional. Motivation is reduced to control the outcome while cognitive interference lessens learning that responding controls outcome and emotional consequences produce fear for as long as the subject is uncertain of the controllability of the outcome. These

multiple outcomes would lead the individual to make attributions of non-contingency between future acts and expectancy of reinforcement (Griffith, 1977; Abramson, et al, 1978).

Cue utilization and attributional components affect subsequent performances when subjects are exposed to greater amounts of non-contingent reinforcement (Tennen and Eller, 1977; Freize and Weiner, 1971). Miller and Norman (1979) divided those cues necessary for the development of learned helplessness into two categories--outcome cues and situational cues. Outcome cues are similar to Seligman's "response equals outcome" contingency. Situational cues go further and refer to those events that alter the individual's perception.

Children's interpretation of evaluative feedback appears to be a significant factor in the development of learned helplessness. The important variable appears to be the perception of the relationship between the behavior and the control of reinforcement. Dweck (1973) analyzed children's expectancy for control of reinforcement. She found that children's expectancy for control of reinforcement can be brought under the stimulus control of a significant agent with whom they associated either failure or success. Dweck (1975) tried to alter that perception by training children to take responsibility for their failure experiences by attributing it to insufficient effort. A significant improvement of performance occurred in those given attribution training by changing their attributions of helplessness.

Children's reactions to failure are related to how they interpret failure. The social variables which the child has assimilated as well as the child's history and reaction to failure feedback

should be examined to obtain an accurate assessment of the child's interpretation of control of reinforcement. Dollinger and Taub (1977) found that giving a purpose for a task modified motivation especially for low externally controlled subjects who showed poorer performance and interest. Dweck (1976) found that the explanation children provide for an event affects the way they react. She found that children who met failure under learned helplessness conditions often were fully capable of performing the response required to succeed. These children took less personal responsibility for their responses, attributing their behavior to lack of ability rather than lack of effort.

When studying helpless and mastery-oriented children, Diener and Dweck (1978) found differences in the attributions each group made following failure. Helpless children tended to neglect the role of effort in the outcome of failure situations while mastery-oriented children emphasized it. Helpless children also attributed failure to uncontrollable factors and spent little time trying to arrive at a solution.

Referring to Gagne's Learning Phases (1975), Ross (1976) found that learning disabled children often experience difficulty in the motivation phase where expectancy elicits selective perception and attention to learn. When expectancy to learn is not pleasant because of repeated failure, additional reinforcement such as "extrinsic rewards" are often necessary to help the child progress into the next steps. Lovitt (1968) found that the peformance of learning disabled children is improved when utilizing extrinsic

reinforcement. Calder and Staw (1975) found that low intrinsically motivated subjects increased their enjoyable rating toward a task when extrinsically rewarded.

Deci (1972) suggested that an individual's perception of external reward influences the effects upon intrinsic motivation. He found that payment of extrinsic reward does decrease intrinsic benefit. Extrinsic reinforcement alters the perception of the individual as to the intrinsic worth of performing a task. However, he concluded that reward could lead to feelings of competence and self-determination so that intrinsic motivation could be increased by allowing that individual to recognize competency following successful completion of a task.

Learning disabled children constitute a population that evidences constitutional deficiencies as well as tendencies towards motivational deficiencies. Performance deterioration in these children appears to be the result of internal/external attributions concerning ability to perform and amount of effort expended. These characteristics suggest the probability of learned helplessness conditioning occurring.

The present study proposed that learning disabled children should reflect attributions concerning internal/external responsibility that differ from those of non-learning disabled children. If learning disabled children evidence learned helplessness, it would be expected that their attributions would be more external than non-learning disabled children, placing responsibility for performance, especially experiences involving failure, outside

themselves. Non-learning disabled children could be expected to have more internal attributions, attributing performance to ability.

Following an unsolvable concept learning task, learning disabled and non-learning disabled children should differ in internal/external attributions as well as attributions for ability/effort. These differences should also be reflected in their performance on a subsequent solvable concept learning task, indicating the learned helplessness condition contributed to differences in performance.

The non-learning disabled would be expected to recover from the effects of the learned helplessness condition. They should anticipate a higher performance level than the learning disabled children on expectations of future success on another solvable concept learning task.

Extrinsic reinforcement is expected to alter attributions concerning a learning task so that reluctance to perform would be less important than desire for reward. Introducing extrinsic reward into the solvable concept learning task should produce a change in the attributions of the learning disabled children in performance levels and attributions of responsibility.

Method

Overview

An equal number of learning disabled and non-learning disabled children were randomly assigned to each of the treatment and control groups resulting in a 2 (learning disabled vs. non-learning disabled) x 2 (learned helplessness vs. non-learned helplessness) x 2 (anticipated extrinsic reinforcement vs. un-

anticipated extrinsic reinforcement) multivariate analysis of variance. The Hotelling T^2 was used to compare the learning disabled and non-learning disabled on the Intellectual Achievement Responsibility Questionnaire (IAR). The Attribution Question, the Motivation Question and the Expectancy Question, which were administered both in phase one and phase two, were analyzed by an analysis of variance as well as the Chi Square test. Performance on the second concept learning task, as measured by the correct number of responses and correct number of values, was analyzed by multivariate analysis of variance.

Subjects

The children came from fifth grade classes in three elementary schools in a suburban school system adjacent to an urban school system. The children were Caucasian and predominantly middle-class.

Fifth grade students were used because they are assumed to understand the concept of success/failure and the IAR Questionnaire recommends using children in third grade or over. Two groups of students were used: (1) Fifth grade students identified as learning disabled, using the criteria established by Public Law 94-142 and currently attending a learning lab class for remedial instruction; (2) Fifth grade students from regular classrooms not showing any indication of learning problems characteristic of learning disabled children. Twenty-four learning disabled children received permission to participate. Twenty-four children from the regular classroom were then selected, being of the same sex and having a birthdate closest to a matched learning disabled child.

Procedure

PHASE I: All forty-eight children were given the IAR Questionnaire to compare attributions of performance between the learning disabled and the non-learning disabled. The variables measured on the IAR include: (a) total internal responsibility for performance (I); (b) internal responsibility for successful performance (I+); (c) internal responsibility for failure of performance (I-). Additional variables obtained from the IAR, utilizing scoring procedures developed by Dweck (1973), include: (a) attribution for performance to ability (Ia); (b) attribution for successful performance to ability (I+a); (c) attribution for failure of performance to ability (I-a); (d) attribution for performance to effort (Ie); (e) attribution for successful performance to effort (I+e); (f) attribution for failure of performance to effort (I-e). The IAR was given orally to each child individually to eliminate reading ability as an influencing factor. Oral responses were recorded by the examiner on a scoring sheet.

Children in each of the two groups (learning disabled and non-learning disabled) were assigned in equal number to either a treatment group (learned helplessness conditioning) or a non-treatment (control) group. The treatment consisted of an unsolvable concept learning task consisting of four-dimensional stimulus patterns used in helplessness studies by Tennen and Eller (1977). Each of the four dimensions has two values: (a) a triangle or a circle; (b) striped or plain; (c) line either above or below; (d) large and small. Two stimulus patterns are presented on each 3x5 card.

Each child was presented the patterns and given instructions orally by the examiner. All children received one ten-trial sample problem to clarify the task. Six problems were then presented with the time for each presentation being self-paced. Each problem consisted of ten trials or responses to determine the correct value for that problem.

In the learned helplessness treatment condition, the children (N=24) were told they were participating in a learning experiment which involved solving problems. They were instructed that on each of the ten trials they were to point to the side of the card which contained the "correct" value for that problem. Feedback given on those choices was noncontingent, i.e., was not accurate feedback, rendering the concept learning task impossible. Using an intermittent reinforcement schedule used by Hiroto and Seligman (1975), the children were informed on half of the ten trials that their choices were correct and on the other half that their choices were incorrect. After each set of ten trials, they were asked what they believed to be the correct value or solution for that problem. The examiner did not indicate whether the value given was correct or incorrect.

Following the learned helplessness task, those children were asked three sets of questions, replicating those of Butkowsky and Williams (1979). These questions further assessed individual responsibility for performance. The questions, consisting of an Attribution Question, a Motivation Question and an Expectancy Question, were presented individually to each child. On the

Attribution Question, the children selected one of the following responses: (1) I am not good at this; (2) I could have tried harder; (3) It was a hard test; (4) I was unlucky. These responses indicated attributions to: (1) internal - ability; (2) internal - effort; (3) external - stable; (4) external - unstable. The Motivation Question attempted to examine more closely the attribution for performance related to effort, particularly the amount of effort each subject felt they had expended during the learned helplessness task. On the Motivation Question, the children selected one of the following responses: (1) I felt like giving up; (2) I felt like trying even harder; (3) I felt like I was doing the best I could. The last question, the Expectancy Question, was asked to determine expectations for future success on a concept learning task similar to the one utilized in the learned helplessness treatment. The children were asked to indicate how many values (1-5) they felt they would choose correctly on a similar task.

PHASE II: For the solvable concept learning task, a second treatment variable was introduced to all the children. Half of the children (N = 24) were informed prior to the task that they would be accruing points in the form of tokens to be exchanged later for treats (extrinsic rewards) consisting of edibles and trinkets that would be attractive to fifth grade children; the other half were not informed until they had completed the task. Each half consisted of half learning disabled and half non-learning disabled. Each half of the learning disabled and the

non-learning disabled consisted of half who had experienced the learned helplessness condition and half who had not. Eight experimental groups resulted.

All children from both the treatment and the control groups were presented a solvable concept learning task utilizing accurate feedback for each response and value, differing from the previous experimental task in the values used. The values used on this task were: (a) red or blue; (b) triangle or square; (c) large or small; (d) striped or plain; (e) line above or line below. The instructions and scoring were the same as used before.

Upon completion of the solvable concept learning task, the Attribution Question, the Motivation Question and the Expectancy Question presented in Phase I were again administered to all the children.

After all the children had completed the second phase, they exchanged their tokens for the various rewards. A brief explanation of the tasks was given the children indicating that the tasks were difficult to successfully complete some of the time. Since not everyone did the same tasks, it would be impossible for them to compare their performances. They were told the examiner was pleased with their performances and thanked for their participation.

Results

PHASE I:

Performance Attributions. Prior to the experimental treatments, all the children participating in the study completed the

IAR Questionnaire. Using a Hotelling T^2, learning disabled and non-learning disabled children were compared on five subscales of the IAR Questionnaire. The learning disabled group differed from the non-learning disabled group on the total internal responsibility score (I), $F(1,46) = (\bar{X} = 6.62$, $p < .01$ with the non-learning disabled group being more internal ($\bar{X} = 26.9$) than the learning disabled group ($\bar{X} = 24.4$), (See Table 1). The two groups did not differ on internal responsibility for success (I+) but did differ, $F(1,46) = 9.76$, $p < .003$, on internal responsibility for failure (I-). The learning disabled ($X = 11.33$) were more external for non-successful (failure) experiences in school than were the non-learning disabled ($\bar{X} = 13.08$).

Data reported in Table 1 shows the learning disabled children ($\bar{X} = 3.29$) evaluated their failure of performance on a task as being affected more by the amount of effort expended as opposed to ability than did the non-learning disabled group ($\bar{X} = 1.21$). Using Dweck's scoring system for the IAR Questionnaire to determine attributions for performance according to ability and effort, the learning disabled and non-learning disabled groups were found to not differ in their attributions according to ability (Ia). The two groups did differ in their attributions of performance to effort (Ie), $F(1,46) = 9.52$, $p < .0034$. The attribution to successful performance according to effort was not significant but the attribution to failure of performance according to effort (I-e) was, $F(1,46) = 12.98$, $p < .0008$.

Following the learned helplessness condition in which half the learning disabled ($N = 12$) and half the non-learning disabled

children (N = 12) participated, the children's attributions for individual responsibility was obtained from their responses to the Attribution Question, the Motivation Question and the Expectancy Question.

Table 1

Means and Standard Deviations of IAR Questionnaire Scores for Learning Disabled and Non-learning Disabled Children

	Learning Disabled		Non-learning Disabled	
	M	SD	M	SD
I - Total Internal Responsibility for Performance	24.41	3.85	26.95	2.99
I+ - Internal Responsibility for Successful Performance	13.08	2.39	13.88	2.04
I- - Internal Responsibility for Failure of Performance	11.33	2.15	13.08	1.55
Ia - Attribution for Performance to Ability	4.37	1.52	4.21	1.56
I+a - Attribution for Successful Performance to Ability	2.0	1.13	1.96	1.08
I-a - Attribution for Failure of Performance to Ability	2.37	.95	2.25	.95
Ie - Attribution for Performance to Effort	5.25	3.14	2.79	2.40
I+e - Attribution for Successful Performance to Effort	1.95	1.85	1.67	1.19
I-e - Attribution for Failure of Performance to Effort	3.29	1.84	1.21	1.50

Learning disabled children selected alternative #2 (I could have tried harder) of the Attribution Question more frequently than any other alternative and more than did the non-learning disabled children (see Table 2) consistent with the initial results of the IAR Questionnaire attributing performance to internal attributions of effort. However, when each of the response categories was assigned a scale value of one to four and a one-way analysis of variance performed, there was no significant difference between the learning disabled and the non-learning disabled children in their choice of attribution.

On the Motivation Question, Response #3 (I was doing the best I could) received the highest frequency in both learning disabled and non-learning disabled groups, reflecting the children felt they had performed as well as they could. However, all but one of the learning disabled children selected Response #3 while half as many non-learning disabled children selected one of the other two alternatives, attributing effort to perform as either lacking completely or as less than could have been expended. Scale values of one to three were assigned to the three response categories of the Motivation Question. A one-way analysis of variance indicated no significant difference between the learning disabled and non-learning disabled children.

Analysis of variance of the data from the Expectancy Question indicated the two groups of subjects did not differ significantly according to expectation of future success following learned helplessness.

PHASE II:

Performance Task. This phase of the study compared the performance of the learning disabled and the non-learning disabled who had experienced the learned helplessness condition with the control children on a solvable concept learning task (see Table 3) as well as comparing the effects introduced by the reward condition. The dependent variables on the performance task - number of correct responses and number of correct values - as affected by extrinsic reward were analyzed by two 2(learning disabled vs. non-learning dis-

Table 2

Frequencies Reported by Learning Disabled and Non-learning Disabled Children on the Attribution, Motivation and Expectancy Questions

Phase I

Attribution Question	Responses				
	1	2	3	4	Total
Learning Disabled	2	6	3	1	12
Non-learning Disabled	4	4	4	0	12
Total	6	10	7	1	24

Motivation Question	Responses			
	1	2	3	Total
Learning Disabled	1	0	11	12
Non-learning Disabled	3	3	6	12
Total	4	3	17	24

Expectancy Question	Responses					
	1	2	3	4	5	Total
Learning Disabled	1	1	3	5	2	12
Non-learning Disabled	0	2	4	5	1	12
Total	1	3	7	10	3	24

abled) X 2(learned helplessness vs. no learned helplessness) X 2 (anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement) analyses of variance.

The first analysis yielded significant results for the number of correct responses obtained on the task. The main effect comparing the learned helplessness ($\bar{X}$ = 43.04) and no learned helplessness ($\bar{X}$ = 37.46) conditions, was significant, $F(1,46) = 10.60$, $p < .002$, reflecting results opposite to those hypothesized, as was the anticipated extrinsic reinforcement ($\bar{X}$ = 38.04) and the unanticipated extrinsic reinforcement ($\bar{X}$ = 42.06) conditions, $F(1,46) = 6.64$, $p < .01$. Anticipation of extrinsic reinforcement actually depressed performance rather than enhancing it. The learning disabled and non-learning disabled comparison was not significant although it approached significance with $p < .06$.

Since the learning disabled and non-learning disabled children did not differ significantly for number of correct responses obtained on the task, further examination of that performance variable according to learning disabled and non-learning disabled seemed warranted. For the learning disabled children, analysis of variance showed that a significant difference in correct responses occurred between those who experienced the learned helplessness condition ($\bar{X}$ = 40.83) and those who did not ($\bar{X}$ = 36.33), $F(1,22) = 4.73$, $p < .004$. The non-learning disabled children also reflected significant differences for the learned helplessness condition. For correct responses, $F(1,22) = .02$, $p < .05$, the learned helplessness group ($\bar{X}$ = 38.58), showed results similar to those of the learning disabled children.

The second 2 (learning disabled vs. non-learning disabled) X 2(learned helplessness vs. no learned helplessness) X 2(anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement) analysis of variance yielded significant differences for the number of correct values identified on the solvable concept learning task. The number of correct values identified yielded a significant difference, $F(1,46) = 5.86$, $p < .02$, for the type of child - learning disabled ($\bar{X} = 3.08$) and non-learning disabled ($\bar{X} = 4.13$), which had been hypothesized. However, a significant difference did not occur between the learned helplessness conditions as did for correct responses. Unanticipated extrinsic reinforcement ($\bar{X} = 42.06$) had the same effect over anticipated extrinsic reinforcement ($\bar{X} = 38.04$) for correct values as it had for correct responses, $F(1,46) = 6.84$, $p < .01$ in which performance with unanticipated extrinsic reinforcement was higher.

Within the non-learning disabled group the only significant effect occurred for correct responses with the learned helplessness ($\bar{X} = 45.25$) - no learned helplessness ($\bar{X} = 38.58$) conditions, $F(1, 22) = 5.95$, $p < .05$. For correct values the learned helplessness ($\bar{X} = 4.75$) - no learned helplessness ($\bar{X} = 3.50$) condition was also significant, $F(1, 22) = 5.23$, $p < .03$. Extrinsic reward did not have the significant effect for these children that it did for the learning disabled.

The Attribution Question, presented again after the solvable concept learning task, indicated that although learning disabled subjects again selected alternative #2 most frequently, non-learning disabled children also chose it as their preferred alternative

Table 3

Means and Standard Deviations for Performance on the Concept Learning Task (Correct Responses and Correct Values) for all Conditions

	Correct Responses		Correct Values	
	M	SD	M	SD
All Children:				
Condition (Learned Helplessness)				
Control	37.46	7.36	3.29	1.56
Treatment	43.04	5.02	3.92	1.53
Type				
Learning Disabled	38.58	5.94	3.08	1.82
Non-learning Disabled	41.92	6.44	4.13	1.28
Reinforcement				
Anticipated	38.04	5.76	3.04	1.76
Unanticipated	42.46	4.95	4.17	1.20
Learning Disabled Children:				
Condition (Learned Helplessness)				
Control	36.33	7.02	3.08	2.02
Treatment	40.83	4.85	3.08	1.62
Reinforcement				
Anticipated	35.17	6.74	2.17	1.92
Unanticipated	42.00	4.95	4.0	1.38
Non-learning Disabled Children:				
Condition (Learned Helplessness)				
Control	38.58	7.70	3.5	1.50
Treatment	45.25	5.18	4.75	1.05
Reinforcement				
Anticipated	40.92	4.78	3.92	1.61
Unanticipated	42.92	4.96	4.33	1.02

(see Table 4). A 2(learning disabled vs. non-learning disabled) X 2 (learned helplessness vs. no learned helplessness) X 2(anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement)

analysis of variance on the scaled values for the correct responses showed a significant difference between the learned helplessness ($\bar{X}$ = 2.12) and no learned helplessness ($\bar{X}$ = 2.62) groups, $F(1,46) = 4.34$, $p < .04$. The learning disabled and non-learning disabled children who experience the learned helplessness conditioning differed in their attributions for performance from the control children who did not. Control children evidenced a more external attribution than the learned helplessness children. No significant differences occurred for type of child (learning disabled/non-learning disabled) or reinforcement (anticipated/unanticipated).

Table 4

Frequencies Reported by Learning Disabled and Non-learning Disabled Children on the Attributions, Motivation and Expectancy Questions

Phase II

Attribution Question	Responses				
	1	2	3	4	Total
Learning Disabled	4	10	8	2	24
Non-learning Disabled	2	12	8	2	24
Total	6	22	16	4	48

Motivation Question	Responses			
	1	2	3	Total
Learning Disabled	1	3	20	24
Non-learning Disabled	0	4	20	24
Total	1	7	40	48

Expectancy Question	Responses					
	1	2	3	4	5	Total
Learning Disabled	1	4	8	6	5	24
Non-learning Disabled	0	0	10	8	6	24
Total	1	4	18	14	11	48

On the Motivation Question presented after the solvable concept learning task both groups selected alternative #3 most frequently, indicating they had exerted as much effort as they thought possible. No significant differences were reported.

The last variable considered, following the solvable task, resulted in no significant differences between learning disabled and non-learning disabled children on a 2(learning disabled vs. non-learning disabled) X 2(learned helplessness vs. no learned helplessness) X 2(anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement) analysis of variance on the expectancies of one to five correct values. However, there was a

Table 5

Means and Standard Deviations for the Attribution Question-Phase II

	M	SD
Type		
Learning Disabled	2.50	.71
Non-learning Disabled	2.41	.69
Condition		
Learned Helplessness	2.12	.65
No Learned Helplessness	2.62	.69
Reinforcement		
Anticipated Reinforcement	2.45	.80
Unanticipated Reinforcement	2.29	.70

significant two-way interaction between the condition - learned helplessness/no learned helplessness and the type of child - learning disabled/non-learning disabled, $F(1,46) = 4.38$, $p < .04$. Figure 1 shows that the non-learning disabled group anticipated improved performance on another solvable concept learning task

Table 6

Means and Standard Deviations for Expectancy of Performance on a Concept Learning Task

	M	SD
All Children		
Condition (Learned Helplessness)		
Control	4.50	.85
Treatment	4.71	1.08
Type		
Learning Disabled	4.38	1.28
Non-learning Disabled	4.83	.69
Reinforcement		
Anticipated Reinforcement	4.83	.91
Unanticipated Reinforcement	4.38	1.02
Learning Disabled Children		
Condition (Learned Helplessness)		
Control	4.58	1.09
Treatment	4.17	1.38
Reinforcement		
Anticipated	4.08	1.01
Unanticipated	4.67	1.47
Non-learning Disabled Children		
Condition (Learned Helplessness)		
Control	4.42	.60
Treatment	5.25	.78
Reinforcement		
Anticipated	4.67	.81
Unanticipated	5.0	.58

following learned helplessness while the leearning disabled group's expectancy decreased following learned helplessness.

The difference between the non-learning disabled children who experienced the learned helplessness condition ($\bar{X}$ = 5.25) and those who did not ($\bar{X}$ = 4.42) was significant, $F(1,22) = 8.33$, $p < .008$.

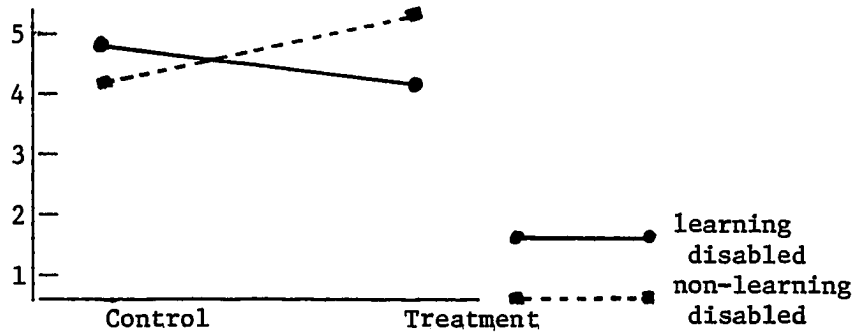

Fig. 1. Mean number of expectancies for correct values on future solvable concept learning task following learned helplessness treatment (T) and no learned helplessness (C) for learning disabled and non-learning disabled children.

Discussion

This study extended the Dweck and Repucci (1973) study of the effects of learned helpless in helpless and persistent children to a comparison of learning disabled and non-learning disabled children. Results from the IAR Questionnaire presented prior to the treatment conditions in this study support Dweck and Repucci's findings as well as those of Chapman and Boersma (1979) by identifying learning disabled children as being more external in their acceptance of personal responsibility for academic failure experiences. These results differ from those of Weiner and Kukla (1970) whose low achievement subjects did not believe performance varied with expended effort, thus expecting to do worse after an initial success, and those of Butkowsky and Willows (1979) who found that poor readers were more inclined to attribute failure to internal rather than external causes. However, Rotter (1966) and Crandall, Ka sky and Crandall (1965) indicated that external attributions may be a defensive measure towards failure, in an attempt to protect the self. This would be consistent with the Chapman and Boersma (1979) study that found learning disabled children had negative self-perceptions of ability. An external attribution could reduce that negative effect. The results of this study show that these learning disabled children were inclined to shift responsibility for failure to circumstances beyond their control, thus relieving themselves of personal responsibility. Further investigation should consider this shift as being related to egotism investigated by Frankel and Snyder (1978) which suggests that expectancy of no control is the result of motivation to protect self-esteem.

Attributing outcome to ability can mean uncontrollability for the learning disabled child, according to Miller and Norman (1979). The data obtained from the IAR Questionnaire when scored for ability/effort showed the learning disabled children in this study felt significantly more internally responsible for effort than the non-learning disabled, especially for failure of performance. Non-learning disabled children were divided among other attributions for performance which included ability, task difficulty, and luck as well as effort, suggesting less concern over the controllability of the situation. When comparing the attributions between those who experienced the learned helplessness condition and those who did not, the learned helplessness attributions were consistent with those of the learning disabled. These results again support the findings of Frankel and Snyder, who found that attributing failure to effort provided motivation for not trying.

A closer examination of the effort attributions of the learning disabled in this study are warranted since they are inconsistent with those of Diener and Dweck (1978). In their study, they reported that helpless children tended to neglect the role of effort in regard to failure. Dweck and Repucci (1973) found that helpless females were less likely to attribute failure to effort than were helpless males. They suggested that helpless females might be more prone to deterioration of performance in failure situations. In this study, the learning disabled children were more like the helpless males in that they attributed failure to lack of effort. Further investigation should be conducted to determine what attributions the learning disabled and their helpless males have in common

to produce this similarity.

This study did not investigate task difficulty as being an influencing factor. Heider (1958) presented task difficulty as an important dispositional property of the environment in the "can (ability)/try(effort)" model. Consideration should be taken that the children's perception of the concept learning tasks presented could have involved their appraising the tasks' difficulty level, thus further affecting attributions for performance. If, on the Attribution Question, the children had responded twice, as in the Butkowsky and Willows study (1979) in which they found poor readers giving up sooner, especially on a difficult task, the possibility exists that their responses would have included the additional determination of "it was a hard task." Such a determination could have further explained the attribution of effort in this study if the learning disabled children had differed from the non-learning disabled children in a second response.

As was hypothesized, the non-learning disabled children's performance was superior to the learning disabled for the number of correct responses and correct values obtained on the solvable concept learning task. However, a significant difference only for correct values suggests a mediating factor for the learning disabled. One possibility is that the generalized learned helplessness believed to be operating in the learning disabled children resulted in a decreased expectancy to successfully solve the task, evidenced by a depressed performance on correct values in spite of their performance on correct responses. This might be related to the phenomenon observed by Keogh and Donlon (1972) and Mercer,

Cullinan, Hallahan and LaFleur (1975) where the learning disabled performance decreased across trials while the non-learning disabled performance improved. This possibility is supported by the interaction occurring between the learning disabled and the non-learning disabled children who experienced the learned helplessness condition. The non-learning disabled showed greater expectancy for future performance while the learning disabled showed a lower expectancy. A lowered expectancy for success could affect the learning disabled children so that their confidence in using information gained from the correct responses was not adequately used to solve the task or select the correct value.

The interaction effect also offers further explanation for the practice effect observed in the number of correct responses and correct values between the children experiencing the learned helplessness condition and those who did not. Like the Roth and Kubal study (1975), this study found that exposure to only one helplessness task showed facilitation of performance or a practice effect for both the learning disabled and the non-learning disabled children. Roth and Kubal found exposure to subsequent tasks then produced the expected performance deficit. The learning disabled children in this study were similar to the Roth and Kubal subjects, if expectancy of future performance as well as performance on the concept learning task as measured by correct values could be considered valid indicators.

Contrary to expectations, anticipating extrinsic reward decreased performance on the concept learning task both for correct responses and for correct values rather than enhancing it. For the

learning disabled children, that difference was of significant proportion suggesting that extrinsic reward acted as interference to successful performance. Deci (1972) has indicated that extrinsic reinforcement can alter attributions concerning the importance of a task, changing motivation from intrinsic to extrinsic. A possible relationship between the external attributions affected by learned helplessness and extrinsic motivation produced by the extrinsic reward should be considered possible for the learning disabled child. Attributions produced by extrinsic reward for learning disabled children could actually contribute to feelings of uncontrollability, contributing to a motivational deficit synonymous with learned helplessness.

Summary

This study investigated the hypothesis that learning disabled children would differ from non-learning disabled children in attributions of performance, especially when performance resulted in failure. It was further hypothesized that extrinsic reinforcement would contribute to those attributions and alter performance.

Subjects were twenty-four learning disabled and twenty-four non-learning disabled fifth grade children. The learning disabled children were identified as learning disabled by criteria set forth in Public Law 94-142. The non-learning disabled children were from regular classrooms. The children were randomly assigned in equal numbers to each of the treatment cells.

In Phase I all children were given the Intellectual Achievement Responsibility Questionnaire (IAR). Following the IAR, half the learning disabled and half the non-learning disabled children were

presented with an unsolvable concept learning task designed to induce learned helplessness. After the learned helplessness condition, the children responded to an Attribution Question, a Motivation Question and an Expectancy Question regarding their performance.

In Phase II a solvable concept learning task was presented to the children with an additional treatment variable introduced. Half the children were told of an extrinsic reward condition prior to the task and half were told following completion of the task. Each half involved in the extrinsic reward condition included half learning disabled and half non-learning disabled children as well as half who had experienced the learned helplessness condition and half who had not, resulting in a 2(learning disabled vs. non-learning disabled) X 2(learned helplessness vs. no learned helplessness) X 2(anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement) design. Upon completion of the solvable concept learning task, the Attribution Question, the Motivation Question and the Expectancy Question were again presented to the children.

Attributions towards performance were investigated, including attributions for successful performance and failure performance. Analysis of that data utilized the Hotelling T^2 compared learning disabled and non-learning disabled children. The Attribution Question, the Motivation Question and the Expectancy Question were analyzed by the Chi Square test and a 2(learning disabled vs. non-learning disabled) X 2(learned helplessness vs. no learned helplessness) X 2(anticipated extrinsic reinforcement vs. unanticipated extrinsic reinforcement) multivariate analysis of variance. The correct number of responses and correct number of values obtained

from the solvable concept learning task were analyzed by the above multivariate analysis of variance as well as by univariate factorial analyses and individual comparisons of cell means of special interest.

Results of the study indicated that learning disabled children were more external than non-learning disabled in their attributions of reinforcement responsibility, especially for failure experiences. Learning disabled children attributed their failure experiences to lack of effort more than did the non-learning disabled. On the solvable concept learning task the learning disabled children produced fewer correct solutions (values) than did the non-learning disabled although there was no significant difference between the two groups in number of correct responses. These results suggest that the learning disabled children experienced a lower expectancy to perform successfully. This conclusion was supported by the data from the Expectancy Question, which determined expectations for performance on a future concept learning task. The learning disabled expected fewer successful solutions than did the non-learning disabled. Extrinsic reward, instead of enhancing performance, lowered performance.

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APPENDIX A

Prospectus

PERFORMANCE ATTRIBUTIONS AND THE EFFECTS OF EXTRINSIC REINFORCEMENT ASSOCIATED WITH LEARNED HELPLESSNESS IN LEARNING DISABLED AND NON-LEARNING DISABLED CHILDREN

Academic deficiencies as well as other areas of poor performance often manifest themselves in children labeled learning disabled, also called L.D. (Keogh and Donlon, 1972). Cruickshank (1961) pointed out that ". . . Learning is conditioning: it takes place under conditions of success. Children with perceptive disorders (L.D.) have predominantly had failure experiences in the school situation . . ." (p.22). The L.D. child often experiences difficulty in the motivation phase of learning where repeated failure has influenced the expectancy to learn (Gagne', 1974). In L.D. children, the possibility of positive feedback is slight and they learn that many of their best efforts are met with failure.

A low expectancy of success or low expectancy for the control of the reinforcement resulting from the particular dysfunctions of the learning disabled could produce the generalized characteristics of behavior consistent with learned helplessness (Thomas, 1979). Learned helplessness theory states that the phenomenon results from an inescapable aversive event that is mediated by the perception of uncontrollability on the part of the individual (Seligman, 1967). It often arises as a protective-adaptive response to counteract feelings of stress or anxiety produced by belief that reinforcement is beyond one's control and that one is "helpless" (Abramson, Seligman and Teasdale, 1978).

The role of reinforcement is also crucial in the learning process. Reinforcement of antecedent behavior produces acquisition and performance of skills deriving from that behavior. Not all individuals, however, regard a reward to be internally controlled. Others feel the reward is not entirely contingent upon their own actions but possibly influenced by luck, chance or the control of someone else (Rotter, 1966).

The degree to which individuals attribute personal control to reward should reflect a generalized expectancy for a particular act or behavior to be reinforced in the future. Children who experience failure reflect less personal responsibility for their performance and attribute poor performance to lack of ability as opposed to effort (Dweck, 1973). Having previously experienced aversive stimulation (failure experiences) which can induce the learned helplessness state, children with learning disabilities would be expected to show evidence of learned helplessness in generality of external/internal control and performance different to normal performance.

Motivation, therefore, becomes a crucial variable to consider when evaluating those aspects of education necessary for academic growth. Studies involving intrinsic and extrinsic performance indicate extrinsic reinforcement alters the perception of the individual towards the intrinsic benefit of the task (Deci, 1972). Extrinsic reinforcement is perceived to be necessary to enhance performance, causing intrinsic benefit to be diminished. However, several studies have used extrinsic reinforcement in the form of tokens to alter and improve L.D. performance (Karniol and Ross; Haring and Hauck, 1969). Could extrinsic reward serve as an intervention in the reinforcement of weakness potential in the chance-determined position of the L.D. child, leading to feelings of competence and self-determination acquired through successful completion of the task, so that

task performance following learned helplessness does not suffer deterioration?

REVIEW OF THE LITERATURE

Learning Disabilities. In the early 1940's, Dr. Heinz Werner and Dr. Alfred A. Strauss, while working with mentally retarded children, observed that some of them exhibited certain psychopathologies which seemed to differ from other characteristics of the retarded. Some of the children showed what appeared to be involvement of the central nervous system, manifesting itself in perceptual difficulties, distractibility and hyperactivity. These "exogenous" children, as compared to endogenous (familial retarded), were unable to direct their attention to the task at hand because of inability to screen out interfering, nonessential stimuli (Hallahan and Cruickshank, 1961). Dr. Strauss and Dr. Werner expanded their work to include non-retarded children who also exhibited these same deficits in perceptual processing.

As interest in children with perceptual difficulties grew, parents and educators found themselves becoming more and more involved. Many children with learning difficulties had previously been identified as emotionally disturbed or unmotivated although they did not quite seem to fit the pattern. Parents and educators realized the problem was at last identified and quickly moved toward recognition of the learning difficulties characteristic of these children. Dr. Samuel A. Kirk (1971) is credited with introducing the term "learning disabilities" to describe this particular area of concern. Such a term would, he explained, focus attention on behavioral manifestations and not etiology.

The use of L.D. (learning disabilities) as ". . . a construct indicating learning problems in one or more areas of development of ability. .

instead of a category . . ." (Ames, p. 329) represents an accurate description. Seldom does dysfunction occur only in one area. Dr. William M. Cruickshank (1977), a former colleague of Werner and Strauss, once stated that it was not necessary to have a specific neurological diagnosis to prove the presence of perceptual dysfunction since parents and educators deal with specific behaviors which are directly observable.

Definition of learning disabilities. Arriving at a definition of learning disabilities, or "specific learning disabilities" as it is referred to in Public Law 94-142 (Federal Register, 1976), often depends upon the field or interest of the professional, whether medical, psychological or educational. While the medical model leans heavily on terms involving cerebral dysfunction, psychological and educational definitions emphasize behaviors readily observable, with some possibility of remediation. "A learning disability is present when a child does not manifest general mental subnormality, does not show an impairment of visual or auditory functions, is not prevented from pursuing educational tasks by unrelated psychological disorders, and is provided with adequate cultural and educational advantages but nonetheless manifests an impairment in academic achievement . . ." (Ross, p. 11).

Children with I.Q.'s of 80-90 are often placed in the L.D. classroom. Identification as L.D. is accepted better by parents because it is less threatening to them socially than a low intelligence or mentally handicapped label (Ames, 1977). At one time the federal government suggested a ceiling of 2% of the population which should be identified as learning disabled and later raised that ceiling to 12% as increasing numbers of children were placed in the learning disabled category. However, it is generally accepted that the L.D. child will have average

or above intelligence with those of lower intelligence finding placement elsewhere (Torgeson, 1977).

Public Law 94-142, which now sets the criteria for meeting the needs of the L.D. child in the public schools, as well as any other handicapped child, was enacted to safeguard the due process rights of the handicapped. This law defines "specific learning disability" as ". . . a disorder in one or more of the psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage."

Besides providing the definition for L.D., Public Law 94-142 also establishes the criteria for determining the existence of such a disability. Recommendation for inclusion to the L.D. program is based upon: "1. The child does not achieve commensurate with his or her age and ability levels in one or more of the areas listed in paragraph (A) (2) below of this section, when provided with learning experiences appropriate for the child's age and ability levels; and 2. . . . that a child has a severe discrepancy between achievement and intellectual ability in one or more of the following areas: a. Oral expression; b. Listening comprehension; c. Written expression; d. Basic reading skill; e. Reading comprehension; f. Mathematics calculation; or g. Mathematic reasoning."

Behavioral characteristics. The L.D. child is often characterized by general immaturity of personality and cognitive developmental aspects. Certain difficulties in orientation to the environment such as left-right confusion, uncertain body images and weakness in spatial orientation are evidenced. One key characteristic of the learning disabled is a severe limitation of momentary span of attention (Cruickshank, 1966; Torgeson, 1977; Hagen and Hale, 1973). Hallahan (1975) concludes that L.D. children perform less well on tasks measuring selective attention because the ability to do so is more cognitive than perceptual although not ruling out perceptual dysfunction contributing and that encoding strategies are poorly developed.

Discrimination involves two processes: (1) an attentional response and (2) an instrumental response. Until the child develops an instrumental response, selective attention remains at chance level. Herein lies a difficult task for the L.D. child. By and large, a child's success depends upon how well he proceeds with such a task. Santostephano, et al (1971) presents four dimensions of information processing, ordered in terms of how they developmentally emerge: (1) focal attention; (2) field articulation; (3) leveling - sharpening; and (4) equivalence range. Field articulation refers to the attentional processes of relevant/irrelevant information, an ability which improves into the adolescent period. The L.D. child experiences difficulty in the area of field articulation (Kagan, 1965, and Witkin, 1950).

Kagan (1965) reports a link between selective attention and cognitive tempo in his studies of reflection-impulsivity with primary grade children. His intention was to present a problem-solving situation with response uncertainty and to analyze the way a child arrives at a solution.

He, as well as others (Mann, 1973; Keogh and Conlon, 1972), found that differences do exist between reflective and impulsive children, particularly with L.D. children in tempo as well as quality of decision making, with impulsives making significantly more errors.

An interesting and unexpected trend was noted in the Keogh and Donlon study when within-group performance was analyzed. "On each of the measures, PRFT, MFF and Pattern Walking, the performance of the severe L.D. subjects became increasingly poorer across trials whereas normal achieving children tended to improve on these measures. Reasons for deterioration of performance are unclear, but may have included heightened anxiety, poor motivation or inability to maintain attention. Consistency of lowered performance over additional trials is an intriguing finding which raises questions as to motivational or affective components of task performance which may confound learning for children with markedly disturbed perceptual functioning." (p. 335).

Gaddes (1975) discusses the need for further definition of learning disability. Etiological studies suggest three major areas of deficient performance: (1) constitutional, (2) psychological, and (3) social. A constitutional deficiency might not be apparent until the child enters school, at which time his cognitive handicap begins to manifest itself. Before long, the child begins to evidence secondary emotional or psychological problems developing from frustration to match the performance of his peers. These frustrations often become social problems when the child begins to resort to defensive strategies such as hostility or helplessness so he can protect himself and gain control over his life space.

Mercer, Cullinan, Hallahan and LaFleur (1975) report that higher I.Q. L.D. children performed less well than lower I.Q. (mentally retarded)

children. They suggest that "higher intelligence children who are having problems in school may be inclined to be less motivated to follow instructions of the experimenter." (p.199). The motivation construct should be considered as a possible causal factor in the distractibility and lowered performance of L.D. children. Deficits in performance could be related to failure to effectively apply abilities or capacities which the child has at his disposal. Torgeson (1977) theorizes that basic cognitive processes, once thought to be basically due to maturation, are able to be seen as the result of goal-directed behavior on the part of the individual. He reports that " . . . a child's use of active and efficient strategies for information processing depends not only on the level of his own cognitive awareness but also on his purposes and goals in the situation." (p.35).

Chapman and Boersma (1979) attempted to describe some of the affective characteristics of children classified as learning disabled, anticipating that such data could prove useful in providing cognitive remediation. Subjects included L.D. children who received part-time (one-half to one hour per day) remedial instruction and who had been diagnosed as having performance levels 1½ to 2½ years below their grade expectancies in one or more subject areas, and control children from the same classrooms but who had no previous learning difficulties. Academic self-concept, assessed by the Student's Perception of Ability Scale (SPAS), Academic locus of control, assessed by the Intellectual Achievement Responsibility Questionnaire (IAR) and Self-expectation, assessed by the Projected Academic Performance Scale (PAP), were the affective variables studied. L.D. subjects showed significantly lower scores on all three variables, indicating more negative self-perceptions of ability, external attributions of responsibility for school success and lower expectations of success in future

academic tasks. Chapman and Boersma suggest that "the results of the present study suggest that the L.D. children have 'given up' on themselves." (p.6).

Butkowsky and Willows (1979) suggest that children with learning difficulties may reflect learned helplessness. They feel that "it is probable that children develop such perceptions in specific areas of endeavor." (p.14). Their research has concentrated on reading difficulties and the generality of poor readers causal attributions to carry over to academic tasks other than reading. Manipulating success and failure on two reading tasks, they investigated subjects' initial expectancies of success, persistence in the face of difficulty, causal attributions of success and failure, and shifts in expectancy of success as a function of outcome.

The results of the Butkowsky and Willows study yielded significant differences on expectancy scores between good and average readers as compared to poor readers, with poor readers yielding lower expectancies of success on a subsequent task. They found poor readers giving up much sooner on difficult tasks indicating less persistence. Poor readers were more likely to attribute failure to ability (internal attribution) and to attribute success to external causes. Also, poor readers were less likely to attain future success, apparently from lack of confidence. The authors conclude that "the lack of persistence and causal attributions of success and failure displayed by poor readers in this study are consistent with an interpretation of learned helplessness as the term is employed in research with children . . ." (p.39).

Learned Helplessness

Social learning theory and studies by Rotter (1966) provide the theo-

retical background for the learned helplessness model, as presented by Seligman and Maier (1967). In social learning theory, a reinforcement provides the expectancy for that event to be reinforced in the future. Failure to reinforce serves to diminish or extinguish that expectancy. Rotter hypothesized that "when the reinforcement is seen as not contingent upon the subject's own behavior that its occurrence will not increase an expectancy as much as when it is seen as contingent." (p.2). He further hypothesized that "depending upon the individual's history of reinforcement, individuals would differ in the degree to which they attributed reinforcements to their own actions."

The Rotter I-E Scale (1966) was developed to investigate the individual's beliefs about how reinforcement is controlled. The test is considered to be a measure of generalized expectancy rather than one involving specific areas of performance. Analyses of the scale indicate an interaction between experience of success and perceived internal control of reinforcement. While an internal score bears some relation to good adjustment, extreme scores of internality indicate maladjustment, as when an individual with a history of failure blames himself. External scores may indicate a defense against failure by placing the blame on luck or some other cause external to the subject's control.

Rotter and Mulry (1965) investigated differences in the perception of reinforcement between internal and external subjects. Their interest concerned the potential differences in value placed upon different kinds of reinforcements. Differences occurred between tasks that were viewed as determined by skill and those that were determined by chance. Internals took longer to discriminate in a task they viewed determined by skill. Externals took longer on tasks they determined to be based upon chance.

Internals significantly reacted to positive reinforcement in skill situations and performed more successfully over a period of time. Such was not the case with external subjects.

In 1967, Seligman and Maier conducted a series of experiments involving failure to escape traumatic shock. They found that prior exposure of dogs to inescapable shock in a Pavlovian harness consistently interfered with subsequent escape/avoidance learning in a shuttle box. They hypothesized that possibly the dogs "accepted" the shock and so did not attempt to make escape movements.

In Experiment I, they investigated the effects of escapable as compared with inescapable shock on subsequent escape/avoidance responding. The degree of control over shock allowed a dog during its initial exposure was a determinant of whether or not interference occurred later with subsequent escape/avoidance learning. Dogs which learned panel pressing (escape) did not differ from untreated dogs; dogs for which shock termination was independent of responding in the harness showed interference with subsequent escape learning.

Seligman and Maier (1967) explain their findings by stating, ". . . learning theory has stressed two operations, explicit contiguity between two events (acquisition) and explicit non-contiguity (extinction), produce learning. A third operation is proposed, independence between events, also produces learning, and such learning may have effects upon behavior that differ from the effects of explicit pairing and explicit nonpairing. . ." (p.8). When the response does not change the reinforcement, the response and reinforcement are independent. Thus, dependence and independence of response and reinforcement bear close relationship to controllability and uncontrollability of the subject over a situation.

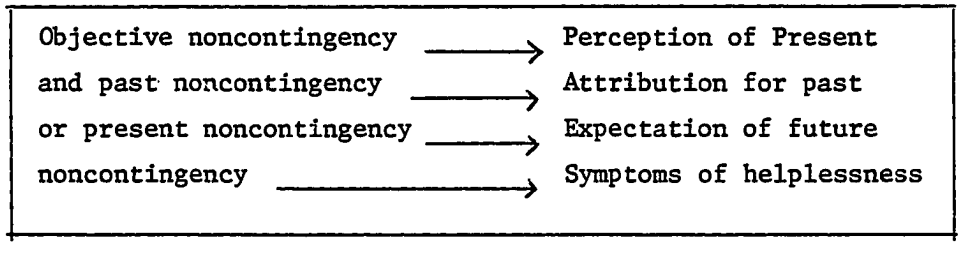
Learned helplessness in humans. Application of the helplessness exhibited by animals in the laboratory setting was extended to human behavior and learning. Pervin (1963) investigated subject response to an uncontrollable stimulus (threat) and found that there is a definite need to predict and control under conditions of threat. He found that subject control of the application of the stimulus is preferable to and less anxiety arousing than experimenter application. Maier (1968) investigating learned helplessness found that it was not shock that produces helplessness but the lack of control. that control being external rather than internal. Inescapable aversive events presented to human subjects results in profound interference with later instrumental learning (Hiroto, 1974; Thornton, 1971; Thornton and Jacobs, 1971). If the subject can escape the aversive event, instrumental behavior remains normal. Subjects learn that responding and reinforcement are independent when shock is inescapable. Such learning undermines the motivation for initiating instrumental responses (Hiroto and Seligman, 1975).

Most earlier studies used aversive events which involved insult to the senses, such as electric shock or loud noise, to induce the helplessness condition. Attempting to more closely replicate a setting representative of a normal population, insoluable cognitive problems were presented to determine if learned helplessness analogous to previous aversive reinforcement would result (Hiroto and Seligman, 1975; Cohen, Rathbart and Phillips, 1976). The tasks consisted of randomly assigning subjects to either a contingent group or a noncontingent group. In the contingent group, each time a correct answer resulted, the response was rewarded. Noncontingent subjects were reinforced intermittently for a correct response. Both internals and externals exhibited learned helplessness on

a subsequent puzzle-solving test. The investigators concluded that the non-noxious pretask did create learned helplessness, replicating results of a study by Feather (1966) involving the effects of prior success and failure. Additional variables investigated included expectations of success and performance on subsequent tasks. On a task of 15 anagrams, half the subjects were told the task was easy and half told it was difficult. Half of each of those groups either failed the first 5 anagrams or passed them. Performance on the last 10 anagrams was significantly lower following failure than after initial success.

Seligman's theory of learned helplessness states that uncontrollable reinforcement resulted in three outcomes - motivational, cognitive and emotional (Abramson, Seligman and Teasdale, 1978). Motivation is reduced to control the outcome, cognitive interference lessens learning that responding controls outcome, and emotional consequences produce fear for as long as the subject is uncertain of the controllability of the outcome. "The hypothesis is motivational in that it postulates that mere exposure to uncontrollability is not sufficient to render an organism helpless; rather, the organism must come to expect that outcomes are uncontrollable in order to exhibit helplessness. In brief, the motivational deficit consists of retarded initiation of voluntary responses and is seen as a consequence of the expectation that outcomes are controllable. If the organism expects that its responses will not affect some outcome, then the likelihood of emitting such responses decreases. Second, the learned helplessness hypothesis argues that learning that an outcome is uncontrollable results in a cognitive deficit since such learning makes it difficult to later learn that responses produce that outcome . . ." (Abramson, et al, p. 50).

The flow of events leading to learned helplessness begins with objective noncontingency - the behavior is not rewarded as was expected. The individual perceives the noncontingency and recognizes the futility of responding. After recalling past experiences of noncontingency, the individual makes an attribution between his acts and the outcomes. The attribution leads to expectation of noncontingency between future acts of the individual and the outcome. Symptoms of helplessness result (Griffith, 1977; Abramson, et al, 1978). The flow of events leading to symptoms of helplessness are charted in the following diagram:



(Abramson, Seligman and Teasdale, 1978)

Attributional Cues. Cue utilization and attributional components affect subsequent performance when subjects are exposed to greater amounts of noncontingent reinforcement (Tennen and Eller, 1977; Frieze and Weiner, 1971). Subjects who are told a task is easy will reflect poorer performance and take a longer time to complete a task under learned helplessness conditions than subjects who believe the task is difficult from the start. When cues indicate uncontrollability might be situational, subjects seem to redouble their efforts on subsequent tasks.

Few studies have adequately separated the motivational components from the cognitive components in the study of learned helplessness. Miller and Norman (1979) concern themselves with determining if perform-

ance deficits that are defined as learned helplessness might not have a cognitive or motivational basis, and further suggest they may result from the impairment of both processes. Based on the knowledge that conditions necessary for the development of learned helplessness are environmental, Miller and Norman present a model that divides environmental cues into two categories - outcome cues and situational cues. Outcome cues are similar to Seligman's response - outcome contingency. Situational cues go further and refer to those events that alter the individual's perception.

Miller and Norman's situational cues lead them to investigate the relationship of attributions to learned helplessness. They characterize attribution by the following: (1) locus of control (internal vs. external) - attribution to internal cause produces a negative effect; attribution to external causes reduces a negative effect; (2) stability (stable vs. variable) - if one attributes past performance to luck (variable), the outcomes tend not to affect performance; if one attributes past outcomes to ability (stable), future outcomes are affected or mediated; (3) specificity (specific vs. general) - attributions can be characterized by generalizability or specificity; (4) importance (important vs. unimportant) - the value an individual assigns to an event. Ability (can) and motivation (try) provides a useful dichotomy when analyzing task performance. Both ability and motivation influence the appraisal of achievement behavior. Weiner and Kukla (1970) studied performance under four conditions: (1) Ability and Motivation; (2) Ability and No Motivation; (3) No Ability and Motivation; (4) No Ability and No Motivation. Subjects administered reward and punishment for hypothetical performances. Results indicated that No Ability and Motivation subjects

were evaluated more highly than Ability and No Motivation. Weiner and Kukla further hypothesized that attributing failure to lack of motivation rather than lack of ability can facilitate achievement while attributing failure to lack of ability implies that successful performance is not possible. Further, they suggest that false ability expectation of teachers influence pupils' subsequent performances.

Weiner and Kukla point out that their results are not inconsistent to those of Rotter (1966) and Feather (1967) who indicated that high achievement subjects take responsibility for whatever the outcome might be, success or failure, while low achievement subjects regard achievement as independent of ability and effort. "Subjects high in achievement motivation perceived that they possessed relatively great skill when they succeeded and a lack of skill when they failed. Similarly, they stated that their performance varied with the amount of expended effort, and would improve further after an initial success. Thus, they apparently were internal with respect to both success and failure. Conversely, subjects low in achievement motivation did not unequivocally differentiate between the amount of skill they possessed in success and failure conditions, did not believe that their performance varied with the amount of expended effort, and expected that they would do worse after an initial success. These data may be interpreted as indicating that subjects low in achievement motivation construct external attributions following either success or failure." (p.15-16).

Pittman and Pittman (1979) examined the helplessness effect by varying the amounts of helplessness training and observing those effects in subjects reflecting either internal or external locus of control. Individuals who expect to have control are assumed to be motivationally

aroused to regain control whenever it is reduced. They were interested in observing how subjects in both groups reacted - either with frustration and hostility or with depression, as well as the outcome of performance on a solvable posttest. Their results indicated low helplessness subjects were significantly more hostile than either high helpless or control subjects; high helpless subjects were more depressed than either low helpless or control subjects. Under high helplessness conditions, internals reported depression with performance considerably diminished. Externals also showed similar results although their performance was not quite as debilitated. However, low helplessness internals actually showed improved performance on the posttest while externals performance was significantly affected. Apparently externals and internals differ in their responses to failure. Internals tend to exert more effort to regain control while externals give up rapidly.

Normal subjects who were exposed to only one helplessness training task in a study by Roth and Kubal (1975) showed facilitation of performance. Subjects who were exposed to several learned helplessness tasks showed decrements in performance. Those who indicated attributions to effort as opposed to attribution to ability showed less learned helplessness. Attribution to a difficult task showed less helplessness than when the task was identified as easy.

Children's Attributions. Before learned helplessness studies were extended further to include effects upon children, Bialer (1961) studied the conceptualization of success and failure in children. Children measure their performance against that of others, using standards set by society or by themselves. Bialer suggested that developmental changes occur in success-failure conceptualization along the following

three dimensions: (a) shift in locus of control from external to internal; (b) shift from response to purely hedonistic cues to sensitivity to cues for success or failure; (c) shift from choice of immediate gratification to willingness to delay gratification. He hypothesized that the above dimensions depend both upon the mental age and the chronological age of the child. Not until the child develops a conceptualization of success and failure does failure imply inferiority.

The I.A.R. Questionnaire (Intellectual Achievement Responsibility) developed by Crandall, Katkovsky and Crandall (1965) supports the position that reinforcement responsibility beliefs hold promise of predicting individual differences in reinforcement sensitivity, and attempts to measure those beliefs in both internal and external control. The IAR assesses children's reinforcement beliefs in exclusively intellectual-academic achievement situations. Crandall, et al, hypothesize that ". . . . the child who feels responsible for his successes and failures should show greater initiative in seeking rewards and greater persistence in the face of difficulty . . ." (p.108). Studies by McGhee and Crandall (1968), Michel, Zeiss and Zeiss (1974) and Weiner and Kukla (1970) provide support for their hypothesis. Subjects high in resultant achievement are more likely to be internal than subjects low in resultant achievement, especially with respect to success. High achievement groups also are more likely to perceive successful performance as determined by skill. Low achievement groups perceived success to be influenced by good luck or externally controlled. High achievement subjects attributed failure to external causes while low achievement subjects held themselves responsible for failure.

Children's interpretation of evaluative feedback appears to be a

significant factor in development of learned helplessness. Dollinger and Taub (1977) found that giving a purpose for a task modified motivation. When purpose for behavior (performance on a coding task) was not provided, low externally controlled subjects showed poorer performance and poorer interest. Dweck (1976) suggested that since many alternative interpretations can be given for a behavior, it is likely that the explanation a child provides for an event will affect the way he reacts. Children's reactions to failure are related to the way in which they interpret failure, that is, whether factors are beyond their control or not.

Dweck (1973) attempted to analyze children's expectancy for control of reinforcement. Half of 40 fifth grade children were administered a block-design task by a "success" experimenter. These children were given soluble block designs. The other half were presented insoluble block designs by a "failure" experimenter. Then test problems were administered to both groups by both experimenters which were all entirely soluble. Results yielded a significantly longer solution time for the set of test problems given by the failure experimenter. Dweck concluded that children's expectancy for control of reinforcement can be brought under the stimulus control of a significant agent. Under such conditions, children who had met failure did not perform the response required to succeed even though they were fully capable of doing so. Those children also took less personal responsibility for their responses. Responsibility for their behaviors was attributed to ability rather than to effort.

In learned helplessness, the important variable appears to be the perception of the relationship between the behavior and the control of

reinforcement. Dweck (1975) tried to alter that perception in an effort to train children to take responsibility for their own failure by attributing it to insufficient effort. She hypothesized that by doing so children would increase their persistence at a task in the face of failure. Twelve students identified as helpless and twelve identified as persistent were given one of two treatments. While working math problems, one group met little failure and when they did, the failures were given little attention. The other group was given less time to complete their problems and when failure occurred, they were provided an attribution of insufficient effort by the experimenter. Results revealed that helpless children took less personal responsibility for their failures than did the persistent children. A significant amount of improvement resulted in the group given attribution training. Performance on the success only group rendered subjects less able to deal with subsequent errors. On a repetition choice task, the helpless children chose to perform a task they had previously completed successfully. Only one persistent subject chose to do so.

Dweck's findings (1976) indicate that it is misleading to look only at the events which an experimenter is investigating. She suggests that it is necessary to examine social variables which the child has assimilated, along with the child's history, interpretation of and reaction to failure feedback. She bases these conclusions on: "(1) children's reactions to failure are related to the way in which they interpret failure (i.e., factors beyond their control or not); (2) children's expectancy for control of reinforcement can be brought under the stimulus control of a particular agent; (3) attributions for and reactions to failure can be altered by training." (p.108).

When studying helpless and mastery-oriented children, Diener and Dweck (1978) found differences in the attributions each group made following failure. A subset of 10 items from the IAR which measures attributions of failure to lack of effort was used to separate the subjects into two groups. Helpless children neglect the role of effort in outcome of failure situations while mastery-oriented children emphasize it (Dweck, 1975). Subjects were asked to explain his/her performance after completion of a task designed to elicit learned helplessness. Verbalizations were analyzed and significant differences were found in the two groups. Helpless children were characterized by attributions of failure by solution-irrelevant statements and statements of negative effect. They attributed failure to uncontrollable factors and spent little time trying to arrive at a solution. Mastery-oriented children, on the other hand, were much more concerned about a remedy for their failure. They exhibited a presence of self-monitoring and self-instructions, and maintained a positive effect towards the task.

Learning Disabilities and Learned Helplessness

Learning takes place best under conditions of success. The L.D. child has met repeatedly with failure experiences, both inside the classroom and out. Positive growth and development are premised on the ability of such a child to perceive his world in a way similar to that of normal children. Not perceiving the same, the L.D. child does not give the same response as the normal child. Such learning, or conditioning, takes place under such circumstances but with the standards of society for the normal child which often run counter to L.D. responses. Thus, teachers and parents misinterpret such learning and see it as misbehavior or lack of motivation (Cruickshank, 1961).

Performance deterioration in L.D. subjects over subsequent trials, especially when ability to perform appears adequate, bears striking resemblance to the "learned helpless" construct introduced by Seligman and Maier (1967). Failure does not serve as proper motivation for learning. The failure-laden histories of the L.D. child further suggest a learned helpless conditioning and warrant closer examination of this particular phenomenon (Thomas, 1979).

Seligman (1969) suggests that if learned helplessness does apply to people, then why couldn't they be innoculated against giving up in situations where they feel responding is non-contingent. To take this one step further, if L.D. children should constitute a population that is more likely to evidence learned helplessness, then special considerations could be given to help shift attributions of lack of ability and internal/external orientation to more productive ones. If attributional cues held by L.D. children do differ from normal children, then extrinsic motivation could be useful because of the shift in attribution from lack of ability to ability to perform.

Adele Thomas (1979) advocates further study of the cognitive variables associated with failure situations in which the L.D. child is involved. By taking into consideration other aspects of research involving learning disabilities and learned helplessness, she suggests that "comprehensive instructional programs and management systems for the learning-disabled child can be further developed." (p.218).

Children with learning disabilities are a population that characteristically fits the categories for increased learned helplessness - more exposure to failure situations, especially situations where normal subjects seem to succeed more often, and lowered motivation because of

less confidence in their abilities. Ross (1976) refers to Gagne's Learning Phases (1974).

Phases:	Motivation	Apprehension	Acquisition
Processes:	Expectancy	Attention Selective perception	Coding
		TIME	
Phases:	Retention	Recall	Generalization
Processes:	Memory Storage	Retrieval	Transfer
		TIME	
Phases:	Performance	Feedback	
Processes:	Responding	Reinforcement	

Motivation

Russell (1971) defines motivation as: (1) a presumed internal force; (2) an energizer for action; (3) a determiner for the direction of that force. The scientific study of motivation has attempted to explain, predict and even possibly control individual behavior. The study of motivation has attempted to specify which outcomes have value to an individual by reducing primary drives. Basic needs (survival needs) precede secondary needs, which arise from conditions that are seen to threaten primary drive reduction.

Two dominant approaches to motivation are: (1) drive theory (Hull and Spence); and (2) expectancy X value theory (Lewin and Tolman). Hullian theory defined motivation as reduction of the drive associated with basic needs. Maslow placed need for achievement and need for affiliation among basic needs in man. Expectancy X value theory is based on

the premise that motivation is a product of the utility or valence of a particular goal and the probability of achieving a desirable outcome (Staw, 1976). The valued goal is considered external to the process of doing.

Kagan (1971) defines motivation in terms of motives. A motive is a mental representation of a goal and motivation is the activation of the motive. One of man's primary motives is the resolution of uncertainty that is generated when he encounters deviations from his conception of truth. An individual seeks uncertainty when he can deal with it but he avoids uncertainty when he cannot deal with it. Certain motives are important to school learning - anxiety, curiosity and the need to achieve. Kagan points out two processes whereby a child's motives can be modified: (1) classical conditioning and (2) reinforcement. In classicial conditioning, positive emotions need to be attached to the subject matter. When negative feelings are attached to the teacher and/or the learning material, the learner tends to remove himself from the learning situation. Learning can also depend upon what happens after the responseor what the reinforcement is. Reinforcement at least facilitates learning, whether or not it is essential for learning.

Intrinsic-Extrinsic Reinforcement. Webster's New World Dictionary defines intrinsic as "belonging to the real nature of a thing: not dependent on external circumstances . . . (p.767). Several benefits derive from intrinsic motivation, especially in the school setting. There is less need for external reinforcers since the task itself provides satisfaction. The need to monitor one's performance is greatly altered. "Instead a task can be designed so that the quantity and/or quality of performance fulfills the individual's needs for accomplishment. When

this is done, the worker who values achievement can monitor his own task accomplishment and reward himself on a completely contingent basis . . ." (Staw, p.4). If the child's positive attention is focused on his performance at a task, the task itself may be used to motivate him (Gagne, 1975).

Webster defines extrinsic as "not belonging to the real nature of a thing, not inherent; being, coming or acting from the outside; extraneous . . ." (p.517). Extrinsic motivation is dependent upon external rewards and requires supervision to assess performance. Gagné pointed out that disabled learners are often motivated by Skinnerian-like behavior modification programs utilizing the extrinsic reinforcement. These procedures provide a sound framework for classroom use when working with the child with learning disabilities (Lovitt, 1968). In his work with learning disabilities children, Lovitt found that tutorial sessions involving increase of word recognition were significantly more effective with use of extrinsic reinforcement.

Self-perception theory predicts that intrinsic and extrinsic motivation do not combine additively but rather interact. In their study, Calder and Staw (1975) investigated the relationship between extrinsic and intrinsic motivation. Intrinsic motivation was defined as being any activity which was valued for its own sake and was self-sustaining. Extrinsic motivation was defined as a situation containing a specific goal which provided satisfaction independent of the actual activity. They also considered intrinsic and extrinsic motivation as a perception on the part of individuals. Forty undergraduate subjects worked a series of 15 puzzles. Half the subjects worked on blank puzzles while half worked on high-interest puzzles. Half of the subjects in each group had been informed they would be paid for performing the task and half weren't.

When the task was completed, the subjects were asked how they enjoyed their work. The results indicated a significant interaction between payment of money and blank puzzles. For the low intrinsically motivating blank puzzle task, the enjoyable ratings increased with the introduction of the extrinsic monetary reward. For the high intrinsically motivating picture puzzle task, the enjoyable ratings decreased.

Deci (1972) suggested that a person's perception of external reward influences the effects upon intrinsic motivation. However, he further suggested that reward could lead to feelings of competence and self-determination so that intrinsic motivation could be increased. He investigated the following premises: (1) Does payment of money for performing an intrinsically motivated activity decrease intrinsic motivation? (2) Does verbal reinforcement increase intrinsic motivation? (3) Does an intrinsically motivated person increase his performance if he feels overpaid? Using 96 undergraduate students, he set up six experimental conditions with six males and six females in each. The conditions were (1) not rewarded; (2) rewarded with money before a free choice period; (3) rewarded with money after a free choice period; (4) (5) (6) rewarded verbally in combination with the three above conditions. The results indicated that subjects rewarded with money were significantly less intrinsically motivated. Subjects who were paid before the free choice time continued working at a significantly higher rate of performance. Only male subjects who were verbally reinforced showed a significant increase in intrinsic motivation.

Level of Extrinsic Rewards		
Low	High	
Insufficient Justification (Unstable Perception)	Perception of Extrinsically Motivated Behavior	Low
Perception of Intrinsically Motivated Behavior	Overly Sufficient Justification (Unstable Perception)	High

Level of Intrinsic Rewards

Negative Relationship Between Intrinsic And Extrinsic Reinforcement (Staw, 1976)

If an individual perceived extrinsic reinforcement as a necessary condition for responding, he might conclude that performance for the sake of intrinsic value was not of sufficient justification. Intrinsic interest in an enjoyable activity tends to decline when the person is induced to engage in a salient extrinsic reward. Apparently the extrinsic reward causes the individual to discount intrinsic interest as a possible motivating factor. Nevertheless, discounting of intrinsic interest may not be an inevitable result of reward dispensation. Some theorists argue that a precursor of intrinsic motivation is a feeling of competence (Harter and Zigler, 1974). Extrinsic rewards could define the individual's performance as competent and so generate intrinsic satisfaction related to that activity.

Karniol and Ross (1977) investigated the effects of rewards upon children's intrinsic motivation. Their primary concern was what the effects were when the reward was performance irrelevant. Rewards are most often dispensed for undertaking a task rather than for specific performance. A question arises as to which type of reward might lead

to feelings of competence and then result in increased intrinsic motivation, a performance irrelevant condition or a no-reward control condition. The subjects were 4 to 9 years old, being distributed equally by sex and age. The experiment also included manipulation as to the degree at which subjects succeeded at the activity. Half of the subjects learned via bogus feedback that their performance was either better or worse than the average. The results indicated that performance irrelevant reward led to significant reduction in play (intrinsic motivation) as a follow-up activity relative to the peformance relevant reward and control conditions. These two did not differ significantly.

The use of rewards and reinforcements leads to the question of what should be reinforced and what kinds of reinforcement should be used in an educational setting. Brophy (1972) lists the following conditions as necessary for making any reinforcement effective: (1) the teacher should be a person who is liked and respected by the children; (2) tasks should be at the level of difficulty appropriate for each child (if the task is too difficult, the child will not achieve reasonable success); (3) the teacher must be able to demonstrate, instruct and remediate. If these conditions are met, children should then be able to achieve success and regularly produce responses which can be reinforced. The use of concrete rewards (or tokens to be exchanged for rewards later), helps focus attention on desirable behavior. Brophy stresses that children should learn that learning can be self-rewarding and that it is not merely a means for obtaining social or material rewards.

Hering and Hauck (1969) investigated learning conditions and how they related to improvement of reading skills with disabled readers.

Social reinforcement had little effect and a stronger reinforcement was needed. Extrinsic motivation in the form of token reinforcement proved effective. Points as counter numbers and later marbles were exchangeable for edibles, trinkets and more expensive store items. The students had earlier been asked what they would like to establish as the store of reinforcers. Mischel (1961) established that the strength of particular reinforcers varied according to age and background of the children. Students were awarded five points for each word learned on a sight list. Counters (or points) were found to increase performance drastically and responding remained stable throughout the testing period.

Delivery of trinkets or "extrinsic reinforcers" does not constitute information feedback necessary for reduction of uncertainty but merely serves as an incentive. The search for information to reduce uncertainty is intrinsically built into the organism for its survival. The search for information is terminated by uncertainty reduction. In learned helplessness, the organism resolves that uncertainty by cessation of responding. Rewards can induce the child to commence responding again, and then lead the child to respond differentially to the point where they are no longer necessary as an extrinsic source of motivation to perform.

Proposed Study

Learning disabilities children should reflect attributions concerning internal/external responsibility that differ from those of normal children. If L.D. children do evidence learned helplessness, it would be expected that their attributions would be more external than non-L.D. children, placing responsibiiity for performance, especially experiences, outside themselves for failure. Non-L.D. children could be expected to have more internal attributions, attributing performances to ability.

Performance on an insoluble concept learning task should indicate that L.D. children approach the task with established attributions concerning helplessness while non-L.D. children experience frustration resulting in a performance level similar to the L.D. performance level.

Expectations of future success on a similar concept learning task should reflect similar consequences but normals should recover following a second concept learning task receiving veridical feedback. L.D.'s should not recover, again indicative of a generalized learned helplessness in the L.D. children.

Extrinsic reinforcement could be expected to alter attributions concerning a learning task so that reluctance to perform would be less important than desire for reward. It is anticipated that performance as measured by extrinsic reward should negate expectancy to fail.

Research Problem. Does generalized learned helplessness occur in L.D. children so that their internal/external attributions towards tasks differ from those of non-L.D. children? Does performance on a concept learning task reflect differences between the responses of L.D. and non-L.D. children following learned helplessness? Is ex-

pectancy for future performance also affected under such conditions but is altered when extrinsic reward is provided as well as performance on an additional concept learning task?

Research Hypotheses. Five major research hypotheses are proposed:

1. L.D. children differ from non-L.D. children in internal/external external attributions of reinforcement responsibility, in that:
   - 1.1 L.D. children attribute academic reinforcement responsibility to external attributions more than non-L.D. children.
   - 1.2 L.D. children attribute academic reinforcement responsibility for successful experiences to external attributions more than non-L.D. children.
   - 1.3 L.D. children attribute academic reinforcement responsibility for failure experiences to external attributions more than non-L.D. children.
2. L.D. children differ from normal children in their attributions of performance on a learning task to ability/effort, in that:
   - 2.1 L.D. children attribute successful experiences to ability less than normal children.
   - 2.2 L.D. children attribute failure experiences to ability more than normal children.
   - 2.3 L.D. children attribute successful experiences to effort more than normal children.
   - 2.4 L.D. children attribute failure experiences to effort less than normal children.
3. The performance of L.D. children differs from the performance of normal children following an insolvable task, in that:
   - 3.1 Non-L.D. children will have more correct responses than

L.D. children.

3.2 Non-L.D. students have more correct values than L.D. children.

4. Following an insoluble task, L.D. children will differ from normal children in expectancy of future success on a similar task, in that:

4.1 L.D. children expect to complete successfully fewer problems on a learning task than will normal children.

4.2 L.D. children expect to complete successfully more problems on a learning task if reinforced than if not reinforced.

4.3 L.D. children expect to complete successfully fewer problems on a learning task following reinforcement than normal children.

5. Extrinsic reinforcement affects performance so that:

5.1 Performance following an insoluble task is greater under reward conditions than non-reward conditions.

5.2 Performance on a soluble task with reward is greater than performance without a reward.

5.3 L.D. performance with reward is greater than L.D. performance without a reward.

5.4 L.D. performance following an insoluble task with reward is similar to performance on a soluble task without reward.

Method

Subjects

Subjects to be used in the study come from three elementary schools in a suburban school system adjacent to an urban school system. The students in this study are all Caucasian, coming from a predominantly middle-class population.

The subjects are all fifth-grade students. Fifth-grade students

are assumed to know the concept of success/failure. (The IAR recommends using children third grade and over). Two groups of students are used: (1) Fifth-grade students identified as learning disabled, using criteria established by Public Law 94-142; (2) Fifth-grade students not showing any indications of learning problems characteristic of L.D. children, from regular classrooms. Each fifth-grade student in the three schools was given a permission slip to have signed by either a parent or guardian. Twenty-four L.D. students received permission to participate. Twenty-four students from the regular classroom were selected, being of the same sex and having a birthdate closest to a matching L.D. subject.

Procedure

All 48 students will be given the Intelligence Achievement Responsibility Questionnaire - IAR (Crandall, Katkovsky and Crandall) to determine locus of control. The IAR will be scored to determine I - total internal or self-responsibility score, I+ - subscore for belief of internal responsibility for successes and I- - subscore for belief on internal responsibility for failures. Oral administration of the scale will be given to each subject individually. The questions are tape-recorded so that each child is presented verbal stimuli which has the same inflections, tone and rate. Oral responses are recorded by the examiner on a scoring sheet.

Students in each of the two groups (L.D. and Normal) will be randomly assigned to either a treatment condition (learned helplessness) or a no-treatment (control). The treatment task consists of four-dimensional stimulus patterns used previously in helplessness studies by Tennen and Eller (1977). Each of the four dimensions has two values: (a) figure is either a triangle or a circle; (b) figure is either striped

or plain; (c) figure has line either above or below; (d) one figure is large and one is small. Two stimulus patterns are presented on a 3x5 card. Each subject is seen individually by the examiner. In the treatment condition, each subject is told, "This is an experiment in learning. You are to try to solve a problem. You will be looking at cards like this. On each card are two figures. One is a triangle and one is a circle; one is striped and one is plain; one has a line above it and one has a line below it; one is large and one is small. When the signal is given, point to the side of the card which contains the 'correct' value (arbitrarily set by the experimenter). I'll tell you whether you are right or wrong. That way maybe you can learn the correct answer and choose correctly as often as possible. I'll say next when it's time to go on."

All students receive one 10-trial sample problem to clarify the tasks. After the sample problem, they are told it is very important for the experiment that they work hard. These instructions are given to motivate them to attend to the tasks. The student is then given six problems with 10 trials per problem.

Pre-determined non-contingent feedback (example: CIICICCICI) is given for each of the six problems, replicating instructions given the high helpless group to induce learned helplessness effects in the study by Pittman and Pittman (1979). Incorrect feedback is given on the last trial. As the subject points to the side of the card he chooses as "correct," the examiner marks whether that choice is correct or incorrect on the scoring sheet. After each set of 10 trials, subjects are asked to state what they believe the correct value is for that set but are given no feedback concerning their answer. They are then told to start the next problem, whose value might or might not be the same as

that of the previous problem.

When the experimental tasks are finished, the children who participated in them are asked three sets of questions (Butkowsky and Williams, 1979). The first set of questions asks the child to attribute performance on the learned helplessness task to one of the following four causes: Ability, Effort, Task Difficulty or Luck. The questions are presented on four 3x5 cards on which the attributional statements are printed in the first person format:

Card I - I AM NOT GOOD AT THIS

Card II - I COULD HAVE TRIED HARDER

Card III - IT WAS A HARD TEST

Card IV - I WAS UNLUCKY

Instructions for this task are: "I would like to know how you think you did on this test. Do you think (examiner lays the cards on the table before the child and points to the cards as he reads them to the child)." The examiner records the child's responses on the scoring sheet used for the concept learning tasks. (One scoring sheet is used for each child with all responses recorded on it).

The next set of questions elicits the child's appraisal of his motivation in terms of effort. Again, the questions are presented using the same format as the previous questions. The child was asked, "How did you feel while you were doing these questions?"

Card I - I FELT LIKE GIVING UP

Card II - I FELT LIKE TRYING EVEN HARDER

Card IV - I FELT LIKE I WAS DOING THE BEST I COULD

Finally, an expectancy question is posed. The examiner says, "If we were going to do some problems again, just like the ones we did be-

fore, how many values do you think you would be able to solve the next time? Point to the number on the card which says how many you think you will be able to solve." The 3x5 card is presented with the numbers 1-6 on it. The child indicates his choice by pointing to the number.

Following the questioning, the twelve experimental L.D. and twelve experimental non-L.D. children are randomly divided into two treatment groups each, one receiving extrinsic reward (tokens to be exchanged later for prizes) and one receiving no reward. Also, the twelve control L.D. and twelve control normal subjects are divided, using the same procedure and placed equally into the two treatment conditions.

Another concept learning task is presented, differing from the experimental task only in the values used but with accurate reinforcement occurring throughout. The values used on this task are: (a) red or blue; (b) triangle or square; (c) large or small; (d) striped or plain; (e) line above or line below.

With the extrinsic reward group, subjects are told, "For each correct answer, you will receive a token. When we have finished, we will count them and see how many you have. Then, after everyone has completed this activity, you will come back and receive a treat according to how many you have earned. The more tokens you receive, the more you will have to spend." Children are given tokens to hold following each trial and then they are totaled upon completion of all the trials.

Children in the no-reward group are not told of any reward until after the tasks are completed. They are then told, "For each correct answer you gave, you will receive a point. After everyone has completed this activity you will come back and receive a treat according to how many you received."

After all the children have completed the reinforcement phase, they are then brought back to receive rewards for their participation. A brief explanation of the tasks is given to inform the children that the tasks were difficult to successfully complete some of the time. Since not everyone did the same tasks, it is impossible for them to compare performances. They are told the examiner was quite pleased with all their performances. Following the debriefing, they are thanked for their participation, offered their rewards, and they then return to their classrooms.

Measures of the Dependent Variables

The dependent variables that will be observed in this study are: the performance on a concept learning task, the attribution of performance on the task to ability or effort, and expectancy for future success on a similar task. These variables can be logically assumed to be influenced by those characteristics the children bring to the testing situation and to further be influenced by various treatments encountered in the study.

Measures of the dependent variables are as follows:

1. Performance on the concept learning task

   Measures:

   a. Number of correct responses obtained from total of all trials

   b. Number of correct values or solutions, one from each trial

2. Attribution of performance on the concept learning task

   Measure:

   a. Frequency of responses to either ability or effort

3. Expectancy for future success on a similar concept learning task

Measure:

a. Frequency of responses to one to six values

The Intellectual Achievement Responsibility Questionnaire will be used to assess the responsibility children assume for academic achievement, both successful and unsuccessful. The questionnaire is given individually although it has been given as a group test to older children. Children used to provide validity for the scale were comprised of children in grades 3-12 (self-responsibility is established in children by 3rd grade). Oral presentation is recommended for children in the 6th grade and below.

The IAR is composed of 34 forced-choice items. Each item describes either a positive or negative achievement experience. Each experience is described as being caused either by the child (internal) or caused by someone else in the immediate environment (external). External control is limited to significant others - parents, teachers or peers. Positive event items are indicated by a plus sign and negative items by a minus sign. Three scores are recorded: an I+ for all positive events which a child assumes credit; I- for all negative events which the child assumes credit; I - the total score of the sum of I+ and I-.

Test data of the IAR indicates that test-retest reliability is moderately high -- .69 for Total I, .66 for I+ and .74 for I- and above the consistency of children's responses. Correlations between the two subscales are low, suggesting that use of the Total I score alone might not be prudent. The authors' hypothesis that "the child who feels responsible for his successes and failures should show greater initiative in seeking rewards and greater persistence in the face of difficulty . ." (p.108) is consistent with the presented test data.

Design and Analysis

An experimental design utilizing an experimental group - control group will be used, with equal numbers of L.D. and non-L.D. children randomly assigned to each of the treatment cells.

For Hypothesis 1, Hotellings T^2, a multivariate T-test (L.D. vs. non-L.D. on I+, L.D. vs. non-L.D. on I-, L.D. vs. non-L.D. on I) will be employed to analyze the data. Hypothesis 2 also utilizes the Hotellings T^2 (L.D. vs. non-L.D. on $I+_a$, $I-_a$, $I+_e$, I_a, I_e) following scoring procedures set by Dweck (1975). Further analysis involves 2 x 4 (L.D. vs. non-L.D.) x (four response categories) analysis of variance for the Attribution Question and 2 x 3 (L.D. vs. non-L.D.) x (three response categories) analysis of variance for the Motivation Question, as well as the Chi Square test for frequency distribution. The Attribution Question and Motivation Question are first given to the experimental group following the learned helplessness conditioning. They are later presented to all the children following the completion of the concept learning performance task.

Analysis for Hypothesis 3 is provided by a 2 x 2 x 2 (L.D. vs. non-L.D.) x (learned helplessness conditioning vs. no learned helplessness conditioning) x (immediate reinforcement vs. delayed reinforcement) multivariate analysis of variance on both the correct number of correct responses and the number of correct values. Hypothesis 4 also utilizes the same multivariate analysis of variance on the Expectancy Question as well as the Chi Square when it is presented to all the children following the concept learning performance task.

Multivariate analysis of variance, a 2 x 2 x 2 (L.D. vs. non-L.D.) x (learned helplessness conditioning vs. no learned helplessness condition-

ing) x (immediate reinforcement vs. delayed reinforcement) will again be used to assess the data for Hypothesis 5 and to establish any interaction that might have been obtained.

Sample size was determined to allow for the preferability of committing a Type I rather than a Type II error. The alpha level will be set at .05 for the main effects.

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APPENDIX B

The Intellectual Achievement Responsibility Questionnaire

THE IAR SCALE

1. If a teacher passes you to the next grade, would it probably be

____a. because she liked you, or
I+ ____b. because of the work you did?

2. When you do well on a test at school, is it more likely to be

I+ ____a. because you studied for it, or
____b. because the test was especially easy?

3. When you have trouble understanding something in school, is it usually

____a. because the teacher didn't explain it clearly, or
I- ____b. because you didn't listen carefully?

4. When you read a story and can't remember much of it, is it usually

____a. because the story wasn't well written, or
I- ____b. because you weren't interested in the story?

5. Suppose your parents say you are doing well in school. Is this likely to happen

I+ ____a. because your school work is good, or
____b. because they are in a good mood?

6. Suppose you did better than usual in a subject at school. Would it probably happen

I+ ____a. because you tried harder, or
____b. because someone helped you?

7. When you lose at a game of cards or checkers, does it usually happen

____a. because the other player is good at the game, or
I- ____b. because you don't play well?

8. Suppose a person doesn't think you are very bright or clever.

I- ____a. can you make him change his mind if you try to, or
____b. are there some people who will think you're not very bright no matter what you do?

9. If you solve a puzzle quickly, is it

____ a. because it wasn't a very hard puzzle, or
I+ ____ b. because you worked on it carefully?

10. ____ If a boy or girl tells you that you are dumb, is it more likely that they say that

____ a. because they are mad at you, or
I- ____ b. because what you did really wasn't very bright?

11. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen

I- ____ a. because you didn't work hard enough, or
____ b. because you needed some help and other people didn't give it to you?

12. When you learn something quickly in school, is it usually

I+ ____ a. because you paid close attention, or
____ b. because the teacher explained it clearly?

13. If a teacher says to you, "Your work is fine," is it

____ a. something teachers usually say to encourage pupils, or
I+ ____ b. because you did a good job?

14. When you find it hard to work arithmetic or math problems at school, is it

I- ____ a. because you didn't study well enough before you tried them, or
____ b. because the teacher gave problems that were too hard?

15. When you forget something you heard in class, is it

____ a. because the teacher didn't explain it very well, or
I- ____ b. because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you but your answer turned out to be right. Is it likely to happen

____ a. because she wasn't as particular as usual, or
I+ ____ b. because you gave the best answer you could think of?

17. When you read a story and remember most of it, is it usually

I+ ____ a. because you were interested in the story, or
____ b. because the story was well written?

18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be

I- ____ a. because of something you did, or
____ b. because they happen to be feeling cranky?

19. When you don't do well on a test at school, is it

____ a. because the test was especially hard, or
I- ____ b. because you didn't study for it?

20. When you win at a game of cards or checkers, does it happen

I+ ____ a. because you play real well, or
____ b. because the other person doesn't play well?

21. If people think you're bright or clever, is it

____ a. because they happen to like you, or
I+ ____ b. because you usually act that way?

22. If a teacher didn't pass you to the next grade, would it probably be

____ a. because she "had it in for you," or
I- ____ b. because your school work wasn't good enough?

23. Suppose you don't do as well as usual in a subject at school. Would this probably happen

I- ____ a. because you weren't as careful as usual, or
____ b. because somebody bothered you and kept you from working?

24. If a boy or girl tells you that you are bright, is it usually

I+ ____ a. because you thought up a good idea, or
____ b. because they like you?

25. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen

____ a. because other people helped you when you needed it, or
I+ ____ b. because you worked very hard?

26. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more

I- ____ a. because your work isn't very good, or
____ b. because they are feeling cranky?

27. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen

____ a. because he wasn't able to understand how to play, or
I- ____ b. because you couldn't explain it well?

28. When you find it easy to work arithmetic or math problems at school, is it usually

____ a. because the teacher gave you especially easy problems, or
I+ ____ b. because you studied your book well before you tried them?

29. When you remember something you heard in class, is it usually

I+ ____ a. because you tried hard to remember, or
____ b. because the teacher explained it well?

30. If you can't work a puzzle, is it more likely to happen

I- ____ a. because you are not especially good at working puzzles, or
____ b. because the instructions weren't written clearly enough?

31. If your parents tell you that you are bright or clever, is it more likely

____ a. because they are feeling good, or
I+ ____ b. because of something you did?

32. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often

I+ ____ a. because you explained it well, or
____ b. because he was able to understand it?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen

____ a. because she was more particular than usual, or
I- ____ b. because you answered too quickly?

34. If a teacher says to you, "Try to do better," would it be

____ a. because this is something she might say to get pupils to try harder, or
I- ____ b. because your work wasn't as good as usual?

Dweck's Scoring of IAR for Ability and Effort

School_____

Grade_____

Name_____

Success to Ability I+(A)	Success to Effort I+(E)	Failure to Ability I-(A)	Failure to Effort I-(E)
1b			
	2a		
			3b
			4b
5a			
	6a		
		7b	
			8a
	9b		
		10b	
			11a
	12a		
13b			
			14a
			15b
	16b		
	17a		
		18a	
			19b
20a			
21b			
		22b	
			23a
24a			
	25b		
		26a	
		27b	
	28b		
	29a		
		30a	
31b			
32a			33b
			34b
_____	_____	_____	_____

I Score Key:

p.1	p.2	p.3	p.4
b	a	b	b
a	a	b	a
b	b	a	b
b	a	a	b
a	b	b	
a	b	a	
b	a	b	
a	a	b	
b	b	a	
b	a	a	

8-__ = __ 7-__ = __ I(A) = ____

9-__ = __ 10-__ = ___ I(E) = ____

I+ = ____ I- = ____ I = ____

APPENDIX C

Design Paradigm

Design Paradigm

	Blocks	Learned Helplessness Treatment				Reinforcement Treatment				Pay-off
L_1	B_1	LH_1	AE_1	M_1	E_1	R_1	AE_2	M_2	E_2	P_1
						NR_1				
		NLH_1				R_1				
						NR_1				
	B_2	LH_1				R_1				
						NR_1				
		NLH_1				R_1				
						NR_1				

L_1 - Intellectual Achievement Responsibility

B_1 - Learning Disability Subjects (L.D.)

B_2 - Normal Subjects

LH_1 - Ss receive experimental treatment in which an insoluble concept learning task is presented

NLH_1 - Control group - Ss receive no treatment

AE_1 - Ability, Effort Questionnaire

E_1 - Expectancy of Success Question

M_1 - Motivation to Perform Question

R_1 - Ss receive extrinsic reinforcement for performance on concept learning task

NR_1 - Control group - Ss receive no extrinsic reinforcement for performance on concept learning task

AE_2 - Effort, Ability Questionnaire (repeat)

E_2 - Expectancy of Success Question (repeat)

M_2 - Motivation to Perform Question

P_1 - Ss receive extrinsic rewards and debriefing

APPENDIX D

Concept Learning Tasks

CONCEPT LEARNING TASK I
(Treatment)

	Circle	Triangle	Large	Small	Striped	Plain	Line ↑	Line ↓
1.	1. x		x			x	x	
17.	2. x		x			x	x	
5.	3. x		x			x	x	
19.	4. x		x			x		x
15.	5. x		x			x		x
14.	6. x		x			x		x
4.	7. x		x		x		x	
20.	8. x		x		x		x	
2.	9. x		x		x		x	
22.	10. x		x		x			x
6.	11. x		x		x			x
23.	12. x		x		x			x
9.	13. x			x		x	x	
21.	14. x			x		x	x	
16.	15. x			x		x	x	
11.	16. x			x		x		x
12.	17. x			x		x		x
10.	18. x			x		x		x
8.	19. x			x	x		x	
3.	20. x			x	x		x	
7.	21. x			x	x		x	
13.	22. x			x	x			x
18.	23. x			x	x			x
24.	24. x			x	x			x
24.	25.	x	x			x	x	
18.	26.	x	x			x	x	
13.	27.	x	x			x	x	
17.	28.	x	x			x		x
13.	29.	x	x			x		x
18.	30.	x	x			x		x
10.	31.	x	x		x		x	
12.	32.	x	x		x		x	
11.	33.	x	x		x		x	
16.	34.	x	x		x			x
21.	35.	x	x		x			x
19.	36.	x	x		x			x
23.	37.	x		x		x	x	
6.	38.	x		x		x	x	
22.	39.	x		x		x	x	
2.	40.	x		x		x		x
20.	41.	x		x		x		x
4.	42.	x		x		x		x
14.	43.	x		x	x		x	
15.	44.	x		x	x		x	
19.	45.	x		x	x		x	
5.	46.	x		x	x			x
17.	47.	x		x	x			x
1.	48.	x		x	x			x

CONCEPT LEARNING TASK II

	Triangle	Square	Dot	Star	Red	Blue	↑	↓
1.	x			x	x		x	
2.	x			x	x		x	
3.	x			x	x		x	
4.	x			x	x			x
5.	x			x	x			x
6.	x			x	x			x
7.	x			x		x	x	
8.	x			x		x	x	
9.	x			x		x	x	
10.	x			x		x		x
11.	x			x		x		x
12.	x			x		x		x
13.	x		x		x		x	
14.	x	x		x		x		
15.	x	x		x		x		
16.	x		x		x			x
17.	x		x		x			x
18.	x		x		x			x
19.	x		x			x	x	
20.	x		x			x	x	
21.	x		x			x	x	
22.	x		x			x		x
23.	x		x			x		x
24.	x		x			x		x
25.		x		x	x		x	
26.		x		x	x		x	
27.		x		x	x		x	
28.		x		x	x			x
29.		x		x	x			x
30.		x		x	x			x
31.		x		x		x	x	
32.		x		x		x	x	
33.		x		x		x	x	
34.		x		x		x		x
35.		x		x		x		x
36.		x		x		x		x
37.		x	x		x		x	
38.		x	x		x		x	
39.		x	x		x		x	
40.		x	x		x			x
41.		x	x		x			x
42.		x	x		x			x
43.		x	x			x	x	
44.		x	x			x	x	
45.		x	x			x	x	
46.		x	x			x		x
47.		x	x			x		x
48.		x	x			x		x

SCORE SHEET

NAME:

A. Line ↑		B.		C.		D.	
C	I	C	I	C	I	C	I
1.	1.	1. X	1.	1. X	1.	1.	1. X
2.	2.	2.	2. X	2.	2. X	2. X	2.
3.	3.	3.	3. X	3.	3. X	3.	3. X
4.	4.	4. X	4.	4. X	4.	4. X	4.
5.	5.	5.	5. X	5.	5. X	5. X	5.
6.	6.	6. X	6.	6. X	6.	6.	6. X
7.	7.	7. X	7.	7. X	7.	7. X	7.
8.	8.	8.	8. X	8.	8. X	8.	8. X
9.	9.	9. X	9.	9. X	9.	9. X	9.
10.	10.	10.	10. X	10.	10. X	10.	10. X

E.		F.		G.		1.
C	I	C	I	C	I	
1. X	1.	1.	1. X	1.	1. X	
2.	2. X	2. X	2.	2. X	2.	ABILITY EFFORT _____
3.	3. X	3.	3. X	3.	3. X	
4. X	4.	4. X	4.	4. X	4.	
5.	5. X	5. X	5.	5. X	5.	MOTIVATION _____
6. X	6.	6.	6. X	6.	6. X	
7. X	7.	7. X	7.	7. X	7.	
8.	8. X	8.	8. X	8.	8. X	EXPECTANCY _____
9. X	9.	9. X	9.	9. X	9.	
10.	10. X	10.	10. X	10.	10. X	

A. Red -		B. Square -		C. Blue -		D. Line ↓ -	
C	I	C	I	C	I	C	I
1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.
3.	3.	3.	3.	3.	3.	3.	3.
4.	4.	4.	4.	4.	4.	4.	4.
5.	5.	5.	5.	5.	5.	5.	5.
6.	6.	6.	6.	6.	6.	6.	6.
7.	7.	7.	7.	7.	7.	7.	7.
8.	8.	8.	8.	8.	8.	8.	8.
9.	9.	9.	9.	9.	9.	9.	9.
10.	10.	10.	10.	10.	10.	10.	10.

E. Triangle -		F. Star -		G. Line ↑ -		2.
C	I	C	I	C	I	
1.	1.	1.	1.	1.	1.	
2.	2.	2.	2.	2.	2.	ABILITY EFFORT _____
3.	3.	3.	3.	3.	3.	
4.	4.	4.	4.	4.	4.	
5.	5.	5.	5.	5.	5.	MOTIVATION _____
6.	6.	6.	6.	6.	6.	
7.	7.	7.	7.	7.	7.	
8.	8.	8.	8.	8.	8.	EXPECTANCY _____
9.	9.	9.	9.	9.	9.	
10.	10.	10.	10.	10.	10.	

APPENDIX E

Instructions to the Subjects

NO LEARNED HELPLESS SUBJECTS

"THIS IS AN EXPERIMENT IN LEARNING - YOU ARE TO TRY TO SOLVE A PROBLEM. YOU WILL BE LOOKING AT CARDS LIKE THIS. ON EACH CARD ARE TWO FIGURES. ONE IS A TRIANGLE AND ONE IS A SQUARE; ONE MIGHT BE RED AND ONE MIGHT BE BLUE; ONE MIGHT HAVE A STAR IN IT AND ONE MIGHT HAVE A DOT IN IT; ONE MIGHT HAVE A LINE ABOVE IT AND ONE MIGHT HAVE A LINE BELOW IT. WHEN THE SIGNAL IS GIVEN, POINT TO THE SIDE OF THAT CARD THAT CONTAINS THE 'CORRECT' VALUE. I'LL TELL YOU WHETHER YOU'RE RIGHT OR WRONG. THAT WAY MAYBE YOU CAN LEARN THE CORRECT ANSWER AND CHOOSE CORRECTLY AS OFTEN AS POSSIBLE. I'LL SAY NEXT WHEN IT'S TIME TO GO ON."

SAMPLE PROBLEM: A-1 to A-10.
(correct value - red)

"IT IS VERY IMPORTANT THAT YOU WORK HARD. DO THE BEST THAT YOU CAN."

Ability/Effort Questions

"I WOULD LIKE TO KNOW HOW YOU THINK YOU DID ON THIS TEST. DO YOU THINK (point to the cards as you read) 1. I AM NOT GOOD AT THIS; 2. I COULD HAVE TRIED HARDER; 3. IT WAS A HARD TEST; 4. I WAS UNLUCKY." After the child has pointed to a card, ask, "ANY OTHER?" (second choice).

Motivation Question

"HOW DID YOU FEEL WHILE YOU WERE DOING THESE PROBLEMS? DID YOU (point to the cards as you read them) 1. I FELT LIKE GIVING UP; 2. I FELT LIKE TRYING EVEN HARDER; 3. I FELT LIKE I WAS DOING THE BEST I COULD."

Expectancy Question

"IF YOU WERE GOING TO DO SOME MORE PROBLEMS, HOW MANY VALUES DO YOU THINK YOU WOULD GET CORRECT THAT TIME? POINT TO THE NUMBER ON THE CARD WHICH SAYS HOW MANY OF THEM YOU THINK YOU WILL BE ABLE TO SOLVE."

LEARNED HELPLESS SUBJECTS

"THIS IS AN EXPERIMENT IN LEARNING - YOU ARE TO TRY TO SOLVE A PROBLEM. YOU WILL BE LOOKING AT CARDS LIKE THIS. ON EACH CARD ARE TWO FIGURES. ONE IS A TRIANGLE AND ONE IS A CIRCLE; ONE MIGHT BE STRIPED AND ONE MIGHT BE PLAIN; ONE MIGHT BE LARGE AND ONE MIGHT BE SMALL; ONE MIGHT HAVE A LINE ABOVE IT AND ONE MIGHT HAVE A LINE BELOW IT. WHEN THE SIGNAL IS GIVEN, POINT TO THE SIDE OF THAT CARD THAT CONTAINS THE 'CORRECT' VALUE. I'LL TELL YOU WHETHER YOU'RE RIGHT OR WRONG. THAT WAY MAYBE YOU CAN LEARN THE CORRECT ANSWER AND CHOOSE CORRECTLY AS OFTEN AS POSSIBLE. I'LL SAY NEXT WHEN IT'S TIME TO GO ON."

SAMPLE PROBLEM: A-1 to A-10
(correct value - line above)

"IT IS VERY IMPORTANT THAT YOU WORK HARD. DO THE BEST THAT YOU CAN."

Ability/Effort Questions

"I WOULD LIKE TO KNOW HOW YOU THINK YOU DID ON THIS TEST. DO YOU THINK (point to the cards as you read them) 1. I AM NOT GOOD AT THIS; 2. I COULD HAVE TRIED HARDER; 3. IT WAS A HARD TEST; 4. I WAS UNLUCKY.

POINT TO THE CARD WHICH SAYS WHY YOU THINK YOU DID NOT DO SO WELL ON THIS TEST."

After the child has pointed to a card, ask, "ANY OTHER?" (second choice).

Motivation Question

"HOW DID YOU FEEL WHILE YOU WERE DOING THESE PROBLEMS: DID YOU (point to the cards as you read them) 1. I FELT LIKE GIVING UP; 2. I FELT LIKE TRYING EVEN HARDER; 3. I FELT LIKE I WAS DOING THE BEST I COULD."

Expectancy Question

"WE ARE GOING TO DO SOME PROBLEMS AGAIN, LIKE THE ONES WE DID BEFORE. YOU WILL GUESS THE CORRECT VALUE ON SEVERAL CARDS AND I WILL TELL YOU IF YOU ARE RIGHT OR WRONG. THEN YOU WILL TELL ME WHAT YOU THINK THE CORRECT VALUE HAS BEEN. WE WILL DO SIX DIFFERENT SETS OF THEM.

BEFORE WE START I WOULD LIKE TO KNOW HOW WELL YOU THINK YOU WILL BE ABLE TO DO THIS TIME. HOW MANY DO YOU THINK YOU WILL BE ABLE TO SOLVE? POINT TO THE NUMBER ON THE CARD WHICH SAYS HOW MANY OF THEM YOU THINK YOU WILL BE ABLE TO SOLVE."

"NOW WE ARE GOING TO DO SOME MORE PROBLEMS, JUST LIKE THE OTHER ONES. THIS TIME THE FIGURES WILL BE DIFFERENT. ONE IS A TRIANGLE AND ONE IS A SQUARE; ONE MIGHT BE RED AND ONE MIGHT BE BLUE; ONE MIGHT HAVE A STAR IN IT AND ONE MIGHT HAVE A DOT IN IT; ONE MIGHT HAVE A LINE ABOVE IT AND ONE MIGHT HAVE A LINE BELOW IT. REMEMBER, WHEN THE SIGNAL IS GIVEN, POINT TO THE SIDE OF THAT CARD THAT CONTAINS THE 'CORRECT' VALUE. I'LL TELL YOU WHETHER YOU'RE RIGHT OR WRONG. REMEMBER TO DO THE VERY BEST WORK THAT YOU CAN."

6. Ability/Effort Questions - Repeated

"I WOULD LIKE TO ASK YOU AGAIN HOW YOU THINK YOU DID ON THIS TEST. DO YOU THINK: 1. , 2. , or 3. ? (Read from the cards).

---

7. Motivation Question - Repeated

"HOW DID YOU FEEL WHILE YOU WERE DOING THESE PROBLEMS? DID YOU (point to the cards as you read them).

---

8. "IF YOU WERE GOING TO DO SOME MORE, HOW MANY DO YOU THINK YOU WOULD GET CORRECT THAT TIME? POINT TO THE NUMBER ON THE CARD WHICH SAYS HOW MANY OF THEM YOU THINK YOU WILL BE ABLE TO SOLVE."

REWARD DURING:

"FOR EACH CORRECT ANSWER, YOU WILL RECEIVE A TOKEN (show one). WHEN WE HAVE FINISHED WE WILL COUNT THEM AND SEE HOW MANY YOU HAVE. THEN, AFTER EVERYONE HAS COMPLETED THIS ACTIVITY, YOU WILL COME BACK AND RECEIVE A TREAT ACCORDING TO HOW MANY YOU HAVE EARNED. THE MORE TOKENS YOU RECEIVE THE MORE YOU WILL HAVE TO SPEND."

REWARD AFTER:

"FOR EACH CORRECT ANSWER YOU GAVE, YOU WILL RECEIVE A POINT. AFTER EVERYONE HAS COMPLETED THIS ACTIVITY, YOU WILL COME BACK AND RECEIVE A TREAT ACCORDING TO HOW MANY YOU EARNED."

APPENDIX F

Results of Multivariate Analysis of Variance

Table A

Univariate Analyses of the Hotelling T^2 for the IAR Scores

Disabled and Non-Learning Disabled Children

Source	df	MS	F
I	1	77.5208	6.62**
I+	1	7.5208	1.58
I-	1	36.7500	9.76*
Ia	1	.3333	.12
I+a	1	.0208	.02
I-a	1	.1875	.20
Ie	1	72.5208	2.41
I+e	1	6.75	12.98*
I-e	1	31.6875	9.52*

** $p < .01$

Table B

Chi Square Analysis for Attributions Reported on the Attribution Question According to Type of Child - Phase I and Phase II

Attribution Question - Phase I	1	2	3	4	Total
Non-Learning Disabled	4	4	4	0	12
	.03	.02	.01	.5	
	16.67	16.67	16.67	0.00	50.00
	33.33	33.33	33.33	0.00	
	66.67	40.00	57.14	0.00	
Learning Disabled	2	6	3	1	12
	.3	.2	.1	.5	
	8.33	25.00	12.50	4.17	50.00
	16.67	50.00	25.00	8.33	
	33.33	60.00	42.86	100.00	
Total	6	10	7	1	24
	25.00	41.67	29.17	4.17	100.00

Attribution Question - Phase II	1	2	3	4	Total
Non-Learning Disabled	2	12	8	2	12
	.03	.01	.0	.0	
	4.17	25.00	16.67	4.17	50.00
	8.33	50.00	33.33	8.33	
	33.33	54.55	50.00	50.00	
Learning Disabled	4	10	8	2	24
	.3	.1	.0	.0	
	8.33	20.83	16.67	4.17	50.00
	16.67	41.67	33.33	8.33	
	66.67	45.45	50.00	50.00	
Total	6	22	16	4	48
	12.50	45.83	33.33	8.33	100.00

Table C

Chi Square Analysis for Attributions of Motivation Reported on the Motivation Question According to the Type of Child Phase I and Phase II

Motivation - Phase I	1	2	3	Total
Non-Learning Disabled	3	3	6	12
	.5	1.5	.7	
	12.50	12.50	25.00	50.00
	25.00	25.00	50.00	
	75.00	100.00	35.29	
Learning Disabled	1	0	11	12
	.5	1.5	.7	
	4.17	0.00	45.83	50.00
	8.33	0.00	91.67	
	25.00	0.00	64.71	
Total	4	3	17	24
	16.67	12.50	70.83	100.00

Motivation - Phase II	1	2	3	Total
Non-Learning Disabled	0	4	20	24
	.5	.1	.0	
	0.00	8.33	41.67	50.00
	0.00	16.67	83.33	
	0.00	57.14	50.00	
Learning Disabled	1	3	20	24
	.5	.1	0.0	
	2.08	6.25	41.67	50.00
	4.17	12.50	83.33	
	100.00	42.86	50.00	
Total	1	7	40	48
	2.08	14.58	83.33	100.00

Table D

Analysis of Variance for Performance on the Solvable Concept Learning Task for Type of Child Condition and Reinforcement

Source	df	F	P
Correct Responses:			
Condition	1	10.60	.002**
Type	1	3.78	.05 *
Reinforcement	1	6.64	.01**
Condition * Type	1	0.40	n.s.
Condition * Reinforcement	1	0.09	n.s.
Type * Reinforcement	1	1.99	n.s.
Condition * Type * Reinforcement			
Correct Values:			
Condition	1	2.11	n.s.
Type	1	5.86	.02 *
Reinforcement	1	6.84	.01**
Condition * Type	1	2.11	n.s.
Condition * Reinforcement	1	0.46	n.s.
Type * Reinforcement	1	2.71	n.s.
Condition * Type * Reinforcement	1	0.01	n.s.

** $p < .01$
* $p < .05$

Table E

Analysis of Variance for Performance on the Solvable Concept Learning Task for Condition and Reinforcement According to Type of Child

Source	df	F	P
Learning Disabled:			
Responses			
Condition	1	4.73	.04 *
Reinforcement	1	10.90	.004 **
Condition * Reinforcement	1	.32	n.s.
Values			
Condition	1	.00	n.s.
Reinforcement	1	7.61	.01 **
Condition * Reinforcement	1	.25	n.s.
Non-Learning Disabled:			
Responses			
Condition	1	5.95	.02 *
Reinforcement	1	.54	n.s.
Condition * Reinforcement	1	.63	n.s.
Values			
Condition	1	5.23	.03 *
Reinforcement	1	0.58	n.s.
Condition * Reinforcement	1	0.21	n.s.

** $p < .01$

* $p < .05$

Table F

Analysis of Variance for the Attribution Question for Type of Child, Condition and Reinforcement

Phase II

Source	df	SS	F
Condition:			
Learned Helplessness/No Learned Helplessness	1	3.00	4.34 *
Type:			
Learning Disabled/Non-Learning Disabled	1	.08	n.s.
Reinforcement:			
Anticipated Reinforcement/ Unanticipated Reinforcement	1	.33	n.s.

* $p < .05$

Table G

Analysis of Variance for Expectation Question

for Type of Child, Condition and Reinforcement

Phase II

Source	df	S	F
Condition	1	.52	n.s.
Learning Disabled	1	1.04	n.s.
Non-Learning Disabled	1	4.16	.008 **
Type	1	2.52	n.s.
Reinforcement	1	2.52	n.s.
Condition * Reinforcement	1	4.38	.04 *

** $p < .01$

* $p < .05$

Table H

Chi Square Analysis for the Attribution Question According to Type of Child and Condition - Phase II

Attribution Question	1	2	3	4	Total
Non-Learning Disabled:					
Control	2	2	6	2	12
	1.0	2.7	1.0	1.0	
	8.33	8.33	25.00	8.33	50.00
	16.67	16.67	50.00	16.67	
	100.00	16.67	75.00	100.00	
Treatment	0	10	2	0	12
	1.0	2.7	1.0	1.0	
	0.00	41.67	8.33	0.00	50.00
	0.00	83.33	16.67	0.00	
	0.00	83.33	25.00	0.00	
Total	2	12	8	2	24
	8.33	50.00	33.33	8.33	100.00
Learning Disabled:					
Control	1	4	6	1	12
	0.5	0.2	1.0	0.0	
	4.17	16.67	25.00	0.0	50.00
	8.33	33.33	50.00	8.33	
	25.00	40.00	75.00	50.00	
Treatment	3	6	2	1	12
	0.5	0.2	1.0	0.0	
	12.50	25.00	8.33	4.17	50.00
	25.00	50.00	16.67	8.33	
	75.00	60.00	25.00	50.00	
Total	4	10	8	2	24
	16.67	41.67	33.33	8.33	100.00

Table I

Chi Square Analysis for the Motivation Question According to Type and Condition - Phase II

Motivation Question	1	2	3	Total
Non-Learning Disabled:				
Control	0	2	10	12
		0.0	0.0	
		8.33	41.67	50.00
		16.67	83.33	
		50.00	50.00	
Treatment	0	2	10	12
		0.0	0.0	
		8.33	41.67	50.00
		16.67	83.33	
		50.00	50.00	
Total		4	20	24
		16.67	83.33	100.00
Learning Disabled:				
Control	0	2	10	12
	0.5	0.2	0.0	
	0.00	8.33	41.67	50.00
	0.00	16.67	83.33	
	0.00	66.67	50.00	
Treatment	1	1	10	12
	0.5	0.2	0.0	
	4.17	4.17	41.67	50.00
	8.33	8.33	83.33	
	100.00	33.33	50.00	
Total	1	3	20	24
	4.17	12.50	83.33	100.00

APPENDIX G

Raw Data

On the computer print-out of the raw data, the various columns represent:

1-2	subject #
4-5	IAR - I+
7-8	IAR - I-
10-11	IAR - I
13	IAR - I+a
15	IAR - I+e
17	IAR - I-a
19	IAR - I-e
21	IAR - Ia
22	IAR - Ie
25	C - control or T - treatment
27	R - anticipated extrinsic reinforcement or N - unanticipated extrinsic reinforcement
29	L - learning disabled or A - non-learning disabled
31	1st attribution question
33	1st ability/effort question
35	1st expectancy question
37	2nd attribution question
39	2nd ability effort question
41	2nd expectancy question
43-44	# correct responses
46	# correct values

Raw Scores from Computer Print-out

1234567	101234567	201234567	301234567	401234567
1 13 12 25 2 2 1 4 3 6 C N L			2 3 3 31 2	
2 14 12 26 1 2 3 2 4 4 T R L		2 3 4	2 3 3 43 4	
3 13 13 26 2 2 3 1 5 3 T N L		4 3 5	2 3 4 41 2	
4 15 13 28 2 0 1 3 3 3 T R L		2 3 3	2 3 4 42 4	
5 7 13 20 6 4 2 2 8 6 C N L			3 3 6 43 6	
6 14 13 27 2 1 2 2 4 3 C R L			2 3 5 35 1	
7 14 14 28 1 2 3 0 4 0 T N A		2 2 3	2 3 5 50 5	
8 15 14 29 2 0 2 1 4 1 T R A		2 1 3	2 3 4 47 5	
9 13 15 28 3 1 2 0 5 1 C R A			3 3 4 42 3	
10 13 13 26 2 2 3 1 5 3 T R A		2 2 4	2 2 5 40 5	
11 15 16 31 1 1 1 0 2 1 C N A			3 2 4 45 6	
12 16 12 28 1 0 3 2 4 2 C N A			3 3 4 34 2	
13 13 11 24 3 1 4 2 7 3 C R L			3 3 4 38 3	
14 15 13 28 1 2 2 2 3 4 T R L		3 3 2	3 3 4 34 0	
15 14 7 21 3 0 4 6 7 6 C R L			4 3 4 21 1	
16 10 6 16 2 5 3 8 513 C N L			3 3 5 46 5	
17 8 10 18 3 6 3 4 610 T R L		3 3 5	1 2 6 35 0	
18 10 11 21 1 6 2 4 310 T N L		3 3 3	3 3 1 45 5	
19 15 11 26 1 1 4 2 5 3 C N L			3 3 3 38 4	
20 15 11 26 1 1 2 4 3 5 T N L		2 3 3	1 3 4 48 5	
21 11 11 22 3 3 2 4 5 7 T N A		1 3 4	2 3 6 46 4	
22 12 13 25 5 0 3 1 8 1 T R A		3 3 3	3 3 5 47 6	
23 15 13 28 2 0 2 2 4 2 C N A			1 3 4 24 2	
24 12 11 23 4 1 3 3 7 4 T N A		1 1 2	2 3 5 40 3	

1234567 101234567 201234567 301234567 401234567

25 16 14 30 2 0 2 1 4 1 C R A 3 3 5 39 3

26 10 12 22 2 5 1 4 3 9 C R A 2 2 4 35 3

27 17 16 33 0 0 0 1 0 1 T R A 3 3 2 2 3 6 33 4

28 12 13 25 3 2 2 2 5 4 C R A 4 3 6 45 4

29 15 14 29 2 0 2 1 4 1 T R A 3 3 5 2 3 6 44 3

30 15 13 28 1 1 3 1 4 2 C R A 3 3 5 27 2

31 16 11 27 1 0 4 2 5 2 C N A 3 3 5 42 5

32 11 13 24 3 3 2 2 5 5 T R A 1 3 4 2 2 6 48 5

33 16 14 30 1 0 1 2 2 2 C N A 1 3 4 36 2

34 15 11 26 2 0 4 2 6 2 T N A 2 1 3 2 3 4 50 6

35 16 15 31 1 0 2 0 3 0 T N A 1 2 4 2 3 5 48 6

36 14 12 26 2 1 2 3 4 4 C N A 4 3 4 50 6

37 11 13 24 2 4 2 2 4 6 C R A 2 3 4 44 4

38 13 11 24 1 3 3 3 4 6 T N A 3 3 4 3 3 6 50 5

39 15 14 29 1 1 2 1 3 2 C R L 3 2 4 38 3

40 14 12 26 1 2 2 3 3 5 C N L 2 3 5 43 5

41 15 13 28 2 0 1 3 3 3 T N L 2 3 4 2 3 5 45 6

42 12 6 18 2 3 4 7 610 C N L 2 3 4 41 3

43 12 9 21 3 2 3 5 6 7 T N L 2 3 4 2 3 6 38 1

44 14 12 26 3 0 3 2 6 2 C R L 3 3 6 29 2

45 15 14 29 2 0 2 1 4 1 C R L 1 2 6 33 2

46 11 11 22 2 4 1 5 3 9 T R L 1 3 4 1 3 5 41 2

47 15 12 27 2 0 1 4 3 4 T R L 2 3 4 4 3 5 33 4

48 15 13 28 0 2 2 2 2 4 T N L 1 1 1 2 1 3 45 4

T = Learned Helplessness Treatment

C = Control

R = Anticipated Extrinsic Reinforcement

N = Unanticipated Extrinsic Reinforcement

L = Learning Disabled Children

A = Non-learning Disabled Children