

THE UNIVERSITY OF MANITOBA

THE ROLE OF DIFFERENTIAL REINFORCEMENT RESPONSIBILITY,
ATTRIBUTION RETRAINING, AND PARTIAL REINFORCEMENT IN
FACILITATING PERSISTENCE IN CHILDREN'S READING BEHAVIOR

by

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ABSTRACT

In an investigation using 36 children experiencing reading difficulties, procedures involving partial reinforcement and attribution retraining were assessed in terms of their relative effectiveness in developing reading persistence. Following the collection of baseline data which reflected the number of difficult sentences each child would read, the Intellectual Achievement Responsibility Scale was administered. A median split on scores which indicated the child's willingness to accept his own lack of effort as the reason for his failure was employed in order to assign children to High or Low effort groups. The children were then assigned to one of three treatment conditions, (a) partial reinforcement (b) partial reinforcement plus attribution retraining, and (c) success only. These manipulations occurred in the context of a reading task presented on three successive days. The Intellectual Achievement Responsibility Scale was then re-administered and posttest measures, essentially a replication of the pretest, were taken. The dependent measure was the number of difficult sentences attempted following training. It was hypothesized that children receiving partial reinforcement would show greater persistence in attempting to read difficult sentences relative to children receiving success only training.

Further it was predicted that children who were least willing to accept lack of effort as the reason for failure and who received attribution retraining along the effort dimension would show superior performance relative to all other groups. The data support both these hypotheses. The results are discussed within the frameworks provided by learning and attribution theories.

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CHAPTER I

INTRODUCTION

Academic failure, particularly with respect to students of average or better ability, has long been a topic of concern. Educators have devised methods of teaching which "individualize" students, and designed programmed learning techniques, yet a large number of children either fail or are put ahead without the necessary skills to cope with the curriculum. Reading is most likely the scholastic area in which children experience the greatest difficulties. This is evidenced by the vast number of reading clinicians and remedial reading teachers employed by school divisions. University professors complain with rancor that entering students cannot read. Without discussing the etiology at this point, suffice it to say that in achievement related contexts, many children appear to have simply given up.

The present study is concerned with the assessment of several procedures which should theoretically enhance the persistence of children's reading behavior in the context of failure. These procedures have been generated by several lines of independent research: learned helplessness, attribution theory, cognitive psychotherapy, and basic learning research.

Learned helplessness theory is concerned with the phenomenon whereby animals and humans come to learn that their behavior has no effect on a situational outcome (Seligman, 1975). Attribution theory is involved with the reasons people give for their own and other people's behavior and the settings in which people function (Jones, Kanouse, Kelley Nisbett, Valins and Weiner, 1972). The idea that faulty thinking underlies most maladaptive behavior is the basic tenet of cognitive psychotherapy (Ellis, 1974; Beck, 1976). Finally, basic learning research has focused much of its energy studying the situations, such as partial reinforcement, which produce the greatest resistance to extinction (Robbins, 1971). While these areas of investigation use different languages and are derived from dissimilar theoretical backgrounds, they all point to the issue of persistence of behavior in the context of aversive circumstances.

The present investigation was designed to compare procedures involving partial reinforcement and attribution retraining on the development of perseverance in children's reading behavior, and to determine the extent to which prior attributions influenced the effect of attribution retraining along the effort dimension.

Learned Helplessness

The learned helplessness hypothesis, as developed by Maier and Seligman (1976), argues that when events are uncontrollable, an organism comes to learn that its behavior

and outcomes are independent. Furthermore, this learning produces motivational, cognitive and emotional disruption.

A. Animal Studies

Learned helplessness was first investigated systematically by Overmier and Seligman (1967). They showed that dogs who had prior exposure to inescapable shock in a Pavlovian harness, failed to learn to escape shock in a shuttle box situation where escape was possible. They suggested that the salient variable producing this effect was uncontrollability. Shortly thereafter Seligman and Maier (1967) tested this hypothesis. They demonstrated that dogs which had first learned to panel press in a Pavlovian harness to escape shock, subsequently learned to escape/avoid in a shuttle box. In contrast, yoked, inescapable shock in the harness produced helplessness, or severe interference with subsequent escape responding in the shuttle box. Seligman, Maier and Geer (1968) reported that they were able to alleviate experimentally produced helplessness in the dog by forcibly getting the dog to emit the response which terminated shock. Explained differently, dogs were shown that they had the ability to escape shock. Learned helplessness has been reported in cats, rats, mice, birds, primates, fish, and man, as well as in dogs (cf. Maier and Seligman, 1976 for a review).

B. Human Studies

Hiroto (1974) extended the study of learned helplessness

to man. He noted that learned helplessness, or the belief that responses and reinforcement are independent, was conceptually similar to Rotter's (1966) internal-external locus of control construct. The internal-external locus of control refers to the degree to which an individual perceives that reinforcements are contingent upon his actions. (The concept of locus of control is elaborated on more fully in the Attribution Theory section of this report.) Hiroto suggested that lack of control over reinforcement, whether real or perceived, impairs performance across a variety of species and a variety of tasks. In his investigation, subjects were assigned to one of 12 cells: Internal-external x pretreatment (escapable, inescapable and no pretreatment) x instructional set (skill or chance). The pretreatment was similar to that in the study mentioned above in that subjects pressed a button to turn off a loud noise. Phase two consisted of a manipulandum device, or finger shuttle box, with which subjects could escape/avoid aversive noise. The results replicated the findings in the animal literature in that inescapable subjects showed the greatest disruption of performance relative to the control and escapable subjects. Additionally, Hiroto found that external subjects were slower to escape or avoid than internals regardless of the treatment condition. Finally, he found a significant difference between the skill versus the chance group. Subjects who were told that they had the ability to escape showed a greater

number of avoidance responses relative to subjects who were told that the experimenter controlled the aversive stimulus. Hiroto concluded that externality, uncontrollability, and the cognitive set induced by chance instructions contribute to the belief that response and outcome are independent. Hiroto further contended that a subject's performance is impaired by the perception of uncontrollability, whether or not that perception is correct. This view was also expressed by Glass and Singer (1972) who, in attempting to simulate urban stress, found that simply telling human subjects they could control an aversive stimulus facilitated their performance on a proofreading task. These findings emphasize the idea that it is the acquired expectation of response outcome independence, and not necessarily the objective conditions of controllability which produce response deficits.

In another study with humans, Roth and Bootzin (1974) experimentally induced expectancies of external control by the administration of non-contingent reinforcement for performance. Contrary to expectation the "helpless" subjects showed more problem solving behavior in phase two of the experiment than control subjects. There is a basic procedural difference between the Roth and Bootzin experiment and the paradigm employed in the learned helplessness studies. Subjects in this investigation were exposed to non-contingent, or random positive reinforcement, rather than

uncontrollable aversive outcomes, which may account for their unexpected findings. More recently, Benson and Kennelly (1976) in a related study, examined the hypothesis that controllable aversive outcomes produce "learned competence" and uncontrollable aversive outcomes not uncontrollable reinforcement produce learned helplessness. Employing a four group by pretreatment design on discrimination problems, they gave subjects: a) soluble problems plus correct or incorrect response contingent feedback; b) insoluble non-contingent (random) correct-incorrect feedback; c) always correct response non-contingent feedback; and d) control, no pretreatment. In phase two which was anagram solution, the group that received response contingent feedback (a) did significantly better while subjects receiving insoluble aversive feedback (b) did the worst relative to the control group (d). There was no significant difference between the control group and the random reinforcement group (c). It should be noted that there is a procedural similarity between group (a) and partial reinforcement.

Hiroto and Seligman (1975) investigated the generality of learned helplessness in man. In other words, they wanted to know whether learned helplessness is a specific state which disrupts performance in a situation similar to training, or does it disrupt a broad range of behavior. Utilizing a four independent but simultaneously conducted

experimental design, they had subjects receive the following combinations of pretreatment and test: Instrumental (noise) - instrumental (finger shuttlebox); instrumental-cognitive (anagrams): cognitive-instrumental; cognitive-cognitive (Levine discrimination problems). Each of the four experimental groups consisted of three subgroups as in the previous studies, i.e., escapable, inescapable and control. The results showed that helplessness was produced by inescapability in three out of the four groups. The cognitive-cognitive group did not show a significant difference. This study replicated the results of Hiroto (1974) demonstrating learned helplessness in man in instrumental-instrumental tasks. It further showed that cognitive-instrumental or instrumental-cognitive sequences also produced helplessness, indicating that the phenomenon may be produced cross modally. The cognitive-cognitive procedure was repeated and the number of trials in pretreatment was increased. This time significant differences were found between the inescapable groups and the others, indicating that learned helplessness can be produced within cognitive tasks.

C. Learned Helplessness, Depression and Achievement Motivation

Hiroto (1974) found parallel responding in externals, as measured by a variation of Rotter's (1966) internal-

external locus of control scale, compared to experimentally induced helpless subjects. Miller and Seligman (1975) employing a similar design, looked at parallels in depressed and helpless humans. Subjects were assigned to depressed and non-depressed groups on the basis of their scores on the Beck Depression Inventory (Beck, 1967). Following this procedure, subjects were randomly assigned to escapable, inescapable or no noise pretreatment conditions. Subjects were then given soluble anagrams. The results indicated that there were parallel effects of helplessness and depression. In other words, non-depressed subjects who were exposed to helplessness training showed a deficit in anagram performance parallel to that shown by depressed subjects given no pretreatment. In a follow-up study Miller and Seligman (1976) looked at learned helplessness, depression and the perception of reinforcement. This was done to test the hypothesis that helpless and depressed subjects share the belief that responding and reinforcement are independent. This study involved the same design as Miller and Seligman (1975), however, the main dependent variable was the subjects' tendency to perceive reinforcement as contingent or independent of responses. Learned helplessness and depression both produced perception of independence between response and outcome following failure. This finding did not hold with respect to success, however.

Klein, Fencil-Morse and Seligman (1976) examined

learned helplessness and depression with regard to attribution of failure. Subjects were assigned to depressed and non-depressed groups as in Miller and Seligman (1975). They were then assigned to one of five conditions: a) soluble problems; b) control; c) insoluble problems with no attribution of failure instructions; d) insoluble problems with internal attribution of failure instructions (skill); and e) insoluble problems with external attribution of failure instructions (task difficulty). Subsequently all subjects were given soluble anagrams. Klein et al. found that the non-depressed subjects in the insoluble groups and depressed controls showed poorer anagram performance than non-depressed controls, thus replicating the findings of Miller and Seligman (1975). Furthermore, depressed subjects who attributed failure to task difficulty as opposed to their own incompetence did as well as their non-depressed counterparts, and also were significantly superior to the remaining depressed groups. Therefore, it is not the experience of failure per se which leads to helplessness but failure that leads to a diminished belief in personal competence. Moreover, re-attribution of the cause of failure leads to a reversal of performance deficits.

Attribution Theory

A. Overview

Attribution theory has developed out of several con-

verging lines of investigation in personality-social psychology. According to Jones, Kanouse, Kelley, Nisbett, Valing and Weiner (1972) this research can be classified into three broad concerns:

- (1) The factors motivating the individual to obtain causally relevant information,
- (2) the factors determining what cause will be assigned for a given event, and
- (3) the consequences of making one causal attribution rather than another. (Jones et al., 1972).

Moreover, these concerns have been dealt with via two distinguishable, though in some ways overlapping, approaches. One approach has been primarily concerned with interpersonal perception, or attributions about others. The second approach has placed its emphasis on perception of the self. Since the present research deals with self rather than other perception this review will focus primarily on research related to the perception of one's own behavior.

Attribution theory is concerned with the rules most people use in order to determine the causes of observed behavior. It deals with "the processes by which an individual interprets events as being caused by a particular part of a relatively stable environment." (Kelley, 1967). Fritz Heider is generally acknowledged as the father of attribution theory (Jones et al., 1972; Weiner, 1972). In an early work entitled "Social perception and phenomenal causality" (1944) he noted that human beings attempt to stabilize their perceived environment by way of assigning causal determinants

of events. His main concern was with how the "common man" thinks about causality. As Heider (1958) put it, "In common-sense psychology (as in scientific psychology) the result of an action is felt to depend on two sets of conditions, namely factors within the person and factors within the environment." Heider believed that perceived internal and external forces combine additively to determine behavior. Internal factors were seen under the heading of (a) power, which includes ability, intelligence, in other words, a goal can be attained; and (b) motivation or trying. Heider (1958) contended that both can (ability) and try (effort) are required for a goal to be attained.

B. The Concept of Locus of Control

Rotter (1954, 1966) developed a social learning theory based on the individual's perception of the presence or absence of a causal relationship between his own behavior and subsequent reinforcement. When reinforcement is perceived to be non-contingent upon the person, it is generally seen to be the result of luck, chance, or powerful others. Interpretations of this type are seen by Rotter as a belief in external control. Conversely, a person who sees reinforcement as a result of his own behavior or personal characteristics such as effort and ability, is said to have a belief in internal control. Rotter's (1966)

hypothesis was: "If a person perceives a reinforcement as contingent upon his own behavior, then the occurrence of either a positive or negative reinforcement will strengthen or weaken potential for that behavior to recur in the same or similar situation. If he sees the reinforcement as being outside his own control or not contingent, that is, depending on chance, fate, powerful others, or unpredictable, the preceding behavior is less likely to be strengthened or weakened." One might infer, from Rotter's hypothesis, that individuals who perceive that outcomes are under their personal control will engage more in achievement related behaviors, relative to individuals who believe that outcomes are externally determined. While according to Weiner (1972) empirical relationships in this area are weak, it should be noted that Hiroto (1974) and Dweck and Repucci (1973) have found evidence supporting just such an inference.

Influenced by the work of Rotter and his colleagues, Crandall, Katkovsky and Crandall (1965) devised the Intellectual Achievement Responsibility Scale. The research by Crandall and her associates investigated the antecedents that produce intellectual achievement responses in children. All of the items on the Intellectual Achievement Responsibility Scale pertain directly to achievement related situations. The questions are in a forced choice format and

always pit an internal against an external attribute. Half of the situations depicted have successful outcomes, ("When you do well on a test...."), while the other half describe negative outcomes ("Suppose you don't do as well as usual in a subject...."). Weiner and Kukla (1970) in using the Intellectual Achievement Responsibility Scale reported that there were low and often non-significant correlations between positive and negative outcomes. In other words, a child who attributes achievement success to himself may or may not attribute failure to himself. Weiner and Kukla suggested that the test would have more predictive power if separated into effort and ability ascriptions as well as failure. A search of the literature clearly showed that people in general tend to attribute more responsibility to themselves for positive (success) outcomes than negative (failure) outcomes (Arkin, Gleason and Johnson, 1976; Luginbuhl, Crowe, and Kahan, 1975; Sobel, 1974; Wolosin, Sharman and Till, 1973; Wortman, Costanzo and Witt, 1973; Fitch, 1970; Streufert and Streufert, 1969). However, an examination of research comparing internal and external subjects revealed no clear trends for reinforcement responsibility in relation to success and failure. This lends support to Weiner and Kukla's (1970) proposition that further refinements in this area of investigation were necessary.

C. Perception of One's Self, Affect, and Therapeutic Implications

Several researchers have examined the causal interpretations applied to the individual himself as distinct from the work of Jones and Davis (1965) and Kelley (1967, 1971) who are primarily concerned with the individual's perception of the causes of behavior of other people. The work of psychologists who are primarily concerned with perceiving the causes of one's own behavior bears a similarity to the work of Bem (1967, 1972). Bem proposed that individuals will often survey their behavior toward an entity and then infer that their attitudes toward the entity are consistent with their behavior toward it. However, the attribution theorists extend their view of causal self analysis beyond Bem's "we learn what we think from watching what we do" hypothesis (Nisbett & Valins, 1971).

Davison and Valins (1969) gave subjects a series of electric shocks which were graduated upwards in intensity. Once thresholds were determined via subjects' self report, pills (actually placebos) were administered to all subjects. Subjects were told that the drug might affect skin sensitivity. In phase two of the experiment the intensity of the shock across the entire range of values was altered such that each shock was only half as intense as it was in phase one. Consequently, this doubled the number of shocks the subjects took before terminating the series. In phase

three subjects were assigned to one of two groups. One group was told to wait for the "drug" to wear off. The second group was told that the drug was in fact a placebo. Thus, Davison and Valins reasoned that the subjects in the "drug" group would attribute their ability to withstand shock to external factors, while subjects in the "placebo" group would attribute their resistance to pain as a function of their own ability. Subjects therefore had the same knowledge or experience of their behavior, but differing knowledge of the reasons for their behavior. The final stage of the experiment was essentially a replication of phase one. Subjects who believed that their behavior was a result of their own ability to withstand pain accepted a significantly greater amount of shock on trial three than on trial one. On the other hand, subjects who felt that their behavior was under external control did not differ from trial one to trial three. This study provides further support for the idea of training along the ability dimension.

The hypothesis that behavior may systematically be altered as a function of differential attribution instructions has been tested by several investigators. Schachter and Singer's (1962) study demonstrated that subjects injected with epinephrine showed fewer signs of arousal when told that the drug would produce arousal symptoms, relative to a group who was uninformed about the properties of the

drug. Ross, Rodin and Zimbardo (1969) persuaded subjects to attribute arousal associated with fear of shock to a loud noise. These subjects did not work as hard to avoid shock as their counterparts who were not given attributional instructions. Storms and Nesbitt (1970) got subjects who were chronic insomniacs to take a pill before bedtime. The subjects were told that the pills would produce alertness, high body temperature and irregular heartrate, all symptoms associated with insomnia. Subjects who were taught to attribute their symptoms to the pills got to sleep more quickly on the nights they took the pills than on the nights they did not.

Valins and Nesbitt (1971) in suggesting attribution therapy note that an understanding of causal attributions may help to account for the etiology of emotional disorders and contribute to treatment. Attribution therapy consists of getting patients to relabel or reinterpret the cause of their symptoms in a less damaging manner, thereby leading to a lessening of the debilitating effects of their symptoms.

Ellis (1962) calimed that neurosis is a function of irrational cognition. According to Ellis, people make themselves disturbed through self talk. In his A.B.C. model, Ellis states that people act as if event A. caused their reaction at point C. He points out, however, that

this is not the case, but in fact it is what they tell themselves at point B., e.g., self-blame, that leads to their behavior at point C. Rational emotive therapy, then, claims behavioral changes as a result of getting people to change their irrational belief systems, plus group and real world experience.

Influenced to a large extent by Ellis, Beck (1976) believes that emotional disturbance, particularly depression, is an expression of an underlying shift in the patient's cognitive organization. Man's conceptions or man's conception of events rather than the events themselves eventuate in disturbance. Beck's cognitive therapy is both intellectual and experiential. He sees the task of the therapist as (a) getting the patient to change his self defeating erroneous ways of thinking and (b) encouraging the patient to have group experience and possibly counter-conditioning.

Cognitive restructuring or relabeling plays a major role in hypnosis (Haley, 1973) and family therapy (Menuchin, 1974).

D. Attribution Theory and Achievement Motivation

Achievement motivation within an attributional framework has been most thoroughly studied by Bernard Weiner and his colleagues. Influenced heavily by Heider (1958) and Rotter (1966) it was Weiner's (1972) opinion that the locus

of control dimension had been confounded by the stability dimension in most research. In achievement related situations, one may attribute success and failure to four causal factors: ability, effort, task difficulty, and luck. When assessing an achievement related outcome, one first evaluates himself along these factors and then assigns weights to them. These then will be the perceived reasons for success and failure. Ability and task difficulty are conceptualized as rather stable factors, in other words, they remain comparatively invariable over time. Effort and luck are viewed as relatively unstable. They may change from moment to moment (see Table 1). Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1971) argued that it is the perceived stability of these causal factors that partially determines the changes in expectancy of success following success or failure. Outcomes which have been attributed to stable factors are believed to have a greater likelihood of recurring in the future than outcomes which are attributed to unstable factors. In other words, if an individual believes that his success was the result of his high ability or ease of the task, he should expect to succeed again on subsequent tasks. Similarly, failure which is ascribed to low ability or task difficulty should lead to an increased belief in failure on subsequent trials. Conversely, if failure is attributed to variable causes (luck or effort)

TABLE 1

Classification Scheme for the Perceived
Determinants of Achievement Behavior¹

Stability	Locus of Control	
	Internal	External
Stable	Ability	Task Difficulty
Unstable	Effort	Luck

¹From Weiner, B., Frieze, I., Kukla, A., Read, L., Rest, S., Rosenbaum, R. Perceiving the causes of success and failure. New York: General Learning Press, 1971.

then one might expect success on future trials. Luck may change and the individual, if he is so motivated, can increase the amount of effort expended.

Ability and task difficulty attributions have theoretically similar effects on the expectancy of future success despite the fact that one is considered internal and the other external on the locus of control dimension. By the same token, ascriptions of achievement outcomes to luck and effort may have similar effects on the expectancy of future success, although they too are viewed as external and internal. Weiner et al. (1971) therefore proposed that it is the stability of the dimension which determines future expectancies of success and failure rather than locus of control.

Weiner and Kukla (1970) related achievement motivation to causal attributions. Employing the Intellectual Achievement Responsibility Scale (Crandall, Katkovsky and Crandall, 1965), they found that children high in resultant achievement motivation tended to take responsibility for success but to blame failure on external causes. Children who were low in resultant achievement motivation tended to have a pattern of overall lowered responsibility for both success and failure with no significant differences between their attributions for success or failure. In this study Weiner and Kukla suggested that the internal stems on the

Intellectual Achievement Responsibility Scale could be partitioned into one of two causal categories: ability and effort. An analysis of the internal failure answers revealed that children low in resultant achievement motivation were more likely to attribute failure to lack of ability than the students high in achievement motivation.

The hypothesized relationships between stability of the causal dimension and the expectancy of success have been examined by Meyer (1970) reported, in part, in Weiner (1972). Meyer had subjects estimate their expectancy of success on five trials of an achievement related task. On all trials failure was induced. In addition, following each failure trial the subjects attributed the prior outcome to the causal factors of ability, effort, task difficulty and luck. The data revealed that factor stability was related to expectancy shifts. When prior failure was attributed to lack of ability or to task difficulty, expectancies dropped to a greater extent than when failure was believed to be caused by a lack of effort or bad luck.

Weiner, Heckhausen, Meyer and Cook (1972) argued that the locus of control dimension is salient in so much as it influences affective reactions to an event. More precisely, internal ascriptions in achievement related settings result in greater affect (pride and shame) than ascriptions to external factors. For example, if a student

believed that he did well on an assignment due to his high ability (stable) he would feel more pride in his accomplishments than he would if he ascribed his success to ease of the task (also stable). Therefore, in achievement related contexts, affect is determined by the locus of control dimension, not the stability dimension. Expectancy changes, however, are determined by the stability dimension. Weiner et al. (1972) concluded on the basis of their research that initial approach to activities of an achievement nature is mediated by ascription of success to internal factors (ability and effort). This is due to resultant pride and will increase the likelihood of undertaking future tasks. Persistence in the face of failure, however, is mediated by ascribing failure to unstable factors (lack of effort and bad luck). As stated previously, luck may change and effort can be increased. This study is somewhat at variance with the findings of Klein, Fencil-Morse and Seligman (1976) cited earlier, who found that subjects showed more persistence when they ascribed outcomes to task difficulty (stable). Attribution theory may account for this by noting that external factors would produce less shame and consequently the failure would have been less debilitating.

Interestingly, in an achievement study, influenced by the work of Davison and Valins (1969), Rose, Rodin, and Zimbardo, (1969) and Schachter and Singer (1962), Weiner and

Sierad (1975) investigated the results of experimentally separating the variables of achievement needs and causal ascriptions. Subjects were categorized as to high and low achievement motivation and were subsequently assigned to experimental and control conditions. The experimental group was told that the experimenters were studying the effects of a drug (actually a placebo) which was known to disrupt hand-eye coordination skills. The test phase consisted of a series of four digit symbol substitution sheets. The sheets were rigged such that no subject could possibly complete a sheet in the time allotted. Subjects were told when the time was up for each sheet that they were to indicate if they passed (completed) or failed (did not complete) and also to indicate if they had taken the pill. Weiner and Sierad found that subjects low in achievement motivation who had taken the pill completed significantly more test items than their non-pill counterparts. Conversely, highly motivated subjects in the pill condition did not do as well as their control counterparts. The data suggest that individuals who are low in achievement motivation experience less shame when they are given an opportunity to ascribe their failures to some external (although stable) cause. This is consistent with the findings of Klein, Fencil-Morse and Seligman (1976) cited above. Furthermore, the results provide evidence to suggest that persistence in

the face of failure may be a joint or interactive function of locus of control and stability. Finally, this study demonstrates that attribution training has differential effects across subjects.

REINFORCEMENT RESPONSIBILITY, ATTRIBUTION

RETRAINING AND PARTIAL REINFORCEMENT

A recent study by Dweck and Repucci (1973) linking reinforcement responsibility to learned helplessness, suggests that children's persistence in academic settings is mediated to some extent by the locus of attribution associated with previous failure experiences. Prior to the actual experiment, the children selected to participate in the study were administered the Intellectual Achievement Responsibility Scale (Crandall, Katkovsky and Crandall, 1965). The experimental task consisted of an interspersion of success (soluble) and failure (insoluble) trials in WISC type block design problems. In analyzing the data the children were assigned to helpless or persistent groups based on the time to solution on the test (success) problems. Comparing the test performance to the Intellectual Achievement Responsibility profiles, it was found that the more persistent children took greater responsibility for achievement related situations. In other words, they took credit for their successes as well as blame for their failures. The children who gave up easily following exposure

to an insuluble task tended to take less responsibility for the outcome of their actions. The implication of these results is, since children who are helpless tend to see outcomes as independent of their responses in academic failure, they would be more likely to perceive aversive situations as insurmountable and to give up. Recently, Dweck (1975) identified children who showed diminished responding following failure on arithmetic problems. These children were subsequently exposed to a training procedure which interpolated failure problems along with success problems. Children were told that failure was the result of insufficient effort (attribution retraining). Children trained with this procedure showed enhanced persistence relative to a group of children given success only training.

The attribution retraining procedure utilized by Dweck (1975) consisted of an irregular presentation of success and failure trials, thereby sharing formal similarity with partial reinforcement procedures. Dweck's (1975) success only condition may be viewed as an analogue to continuous reinforcement situations. It is a well established fact in basic learning research that partial reinforcement produces greater resistance to extinction (persistence in the context of non reward) than continuous reinforcement (i.e., the partial reinforcement effect) (cf. Robbins, 1971). Another well known finding in basic

learning research is that when partial reinforcement schedules of equal density differ in terms of N-length (successive non-rewards prior to reinforcement) the schedule associated with longer N-lengths produces increased resistance to extinction relative to the schedule associated with shorter N-lengths. This finding holds both in rats (Capaldi, 1967; Dyck, Milord, Mellgren, Nation, and Fulwiler, 1975) and in humans (Lamberth, 1971; Lamberth and Dyck, 1972; and Chapin and Dyck, 1976). It is conceivable, therefore, that in Dweck's (1975) study, partial reinforcement may have contributed in part to children's increased persistence due to the fact that the variables involving attribution retraining and partial reinforcement were not separated.

Consequently, Chapin and Dyck (1976) developed a procedure whereby schedules of reinforcement and attribution retraining were varied independently in order to determine the relative contribution of each of these variables to persistence. In an investigation with children experiencing reading difficulties, procedures involving partial reinforcement and attribution retraining were assessed in terms of their relative effectiveness in developing reading persistence. Two levels of partial reinforcement, N-length, were factorially combined with the presence or absence of attribution retraining. A fifth

condition received success only training. These manipulations occurred in the context of a reading task which was presented on three successive days. A posttest measure of persistence revealed that the number of difficult sentences attempted by the children was increased jointly by both independent variables.

THE PRESENT STUDY

On the basis of the Chapin and Dyck (1976) results it was concluded that the effect of attribution retraining depends to some extent on the manner in which the success and failure trials are scheduled. Another variable affecting the impact of attribution retraining may be the pre-existing attributions of the children. Attribution retraining may function to raise a child's expectancies regarding the relationship between his responses and outcomes. This is closely related to Seligman's (1975) reasoning in accounting for the phenomenon of learned helplessness. However, it makes sense to conceptualize effective training as a procedure which complements the child's assignment of causality in failure settings. More precisely, the present investigation questioned the assumption made by Dwek (1975) that attribution retraining along the effort dimension will produce a ubiquitous effect among non persistent or helpless children. It was hypothesized that attribution retraining on the dimension

effort would yield the largest increase in persistence with a child who took the least responsibility for failure. In other words, the child who was the most external in his failure ascriptions, would have the most to gain by being taught that an effortful response might alter outcomes in academic situations. Similarly, helpless children, who target failure to insufficient ability as opposed to lack of effort, may benefit from a procedure which helps them to be less self-denigrating. There is a precedent in the literature for this line of reasoning. Weiner and Sierad (1975) found that getting subjects to ascribe their failures to a pill was more effective in producing persistence with individuals who were low in achievement motivation than it was with subjects who were high in achievement motivation. Similarly, Klein, Fencil-Morse and Seligman (1976) noted that training subjects to believe that their failures were due to task difficulty as opposed to their own lack of ability, increased persistence in depressed subjects but not in non-depressed subjects. In the present study children were assigned to groups which reflected their willingness to accept lack of effort as the reason for their failure in achievement related situations. The study then indexed the impact that the presence or absence of attribution retraining along the effort dimension had on the children's subsequent persistence in the context of failure. Further,

it was an attempt to replicate the Chapin and Dyck (1976) findings that indicated that partial reinforcement was superior to continuous reinforcement in producing persistence in the context of failure.

EXPERIMENTAL HYPOTHESES

Hypothesis I. This investigation hypothesized that all children receiving partial reinforcement would show greater persistence in attempting to read difficult sentences relative to children receiving success only training.

Hypothesis II. This study further predicted that children who took the least responsibility for lack of effort being the cause of their failures and who received attribution retraining would show the greatest persistence in the context of attempting to read difficult sentences, relative to all the other children.

The present study involved children experiencing reading difficulties. Two levels of reinforcement responsibility (high vs low) were factorially combined with three treatment conditions; partial reinforcement, partial reinforcement with attribution retraining and success only. The study was carried out in a suburban school in which the range of socio-economic status was from low to high.

CHAPTER II

METHOD

Subjects

Thirty-six grade four, five and six children, approximately half female and half male, all assessed as reading below grade level, on the basis of the Canadian Test of Basic Skills (CTBS), were selected for the study. The children were all identified by their teachers as characteristically expecting failure and demonstrating marked disruption in school performance both motivationally and affectively in the face of failure. An additional criterion for inclusion in the experiment was the fact that all the children had been receiving remedial reading instruction as a regular part of their school curricula.

Procedure

The study took place over five days and included the administration of the Intellectual Achievement Responsibility Scale¹ (IRA) (Crandall, Katovsky and Crandall, 1965) and a pretest (day one), training (days two, three, and four), a re-administration of the IAR followed by a post-

¹The IAR scale appears in its entirety in: Crandall, V.C., Katovsky, W., and Crandall, V.J. Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. Child Development, 1965, 36, 91-109.

test (day five), During the five days children were seen at various times so that there was no systematic biasing for any one group.

The IAR is a locus of control scale specifically designed to measure the degree to which a child assumes responsibility for success and failure in achievement related situations. It consists of thirty-four forced choice items which portray either a positive or negative achievement situation. The subject must choose one of two alternative attributions (a) one in which he takes responsibility for the outcome (internal) or (b) the responsibility for the outcome is placed on another person or situation (external). Items which refer to positive or success outcomes are scored 1(+), while items depicting negative or failure outcomes are scored 1(-). Since the IAR does not provide subjects with a choice between two internal attributions, i.e., attributing outcomes to lack of ability versus lack of effort, five additional questions were developed. These questions related specifically to reading tasks and gave a choice between effort and ability alternatives (see Appendix A).

The pretest and posttest consisted of short sentences which the children were asked to read aloud. Each sentence contained three words beyond their graded word reading ability. The children were told that they were

being given a series of difficult sentences to read aloud and that they were to indicate whether they wished to go on to the next sentence or stop. The baseline measure of persistence was the number of sentences attempted.

Division into Treatment Groups

Following the administration of the IAR and the pretest, the IAR scales were scored for l(-) effort responses. As noted by Weiner and Kukla (1970) the internal scores on the IAR can be broken down into effort and ability stems. A median split was employed to assign children to High l(-) (hi) or Low l(-) (Lo effort groups. A high l(-) score reflected a relatively greater tendency to accept lack of effort as the reason for failure than a low l(-) score. The children in each group (Hi and Lo) were then randomly assigned to one of three treatment conditions, holding sex and grade constant: (a) partial reinforcement training (PRF); (b) PRF and attribution retraining (PRF-AR); (c) success only (CRF). There were thus six cells in all: PRF-Hi; PRF-Lo; PRF-AR-Hi; PRF-AR-Lo; CRF-Hi; and CRF-Lo (see Table 2). For each of the conditions an incorrect (I) trial was a difficult sentence as in the pretest and as a correct (C) trial was a sentence consisting entirely of words within the range of the child's reading ability (see Appendix B).

TABLE 2

Division into Treatment Groups by Sex and Grade

High Effort			Low Effort		
	<u>Grade</u>	<u>n</u>		<u>grade</u>	<u>n</u>
PRF	Males	4	Males	4	1
		5		5	1
		6		6	2
	Females	4	Females	4	1
		5		5	1
		6		6	
PRF- AR	Males	4	Males	4	1
		5		5	2
		6		6	
	Females	4	Females	4	1
		5		5	
		6		6	2
CRF	Males	4	Males	4	2
		5		5	1
		6		6	1
	Females	4	Females	4	
		5		5	1
		6		6	1

Experimental Training

The PRF-Hi and the PRF-Lo groups were exposed to the following 15 trials with PRF schedules consisting of the following success and failure trials on each of the next three days:

Day 1: CCICCCIICCCIIICC

Day 2: CCIICCIICCCIIICCC

Day 3: CIICCCIIICCCICCC

The PRFAR-Hi and the PRFAR-Lo groups received the same schedule but received attribution retraining. On success or C trials, they were told, "That's right, that means you tried." On failure, or I trials, "No, you didn't get that, that means you should have tried harder." Groups without attribution retraining were simply told, "Yes, that's right," or "No, that's wrong." The CRF-Hi and CRF-Lo groups received 15 C trials on each of the three days of training. The range of time spent with each child was seven to fifteen minutes per day.

It should be noted that the daily partial reinforcement schedules did not differ in the percentage of difficult sentences but only in the manner in which they were patterned. Further, the empirical correspondence between success and failure and C and I trials as operationally defined was virtually perfect.

Following training, all children were given a re-administration of the IAR and a posttest in the same manner

as the pretest. The dependent measure was the number of sentences attempted. All sentences were different each day to control for patterning effects.

Experimenters

The study was conducted by two female experimenters. The pretest, posttest and administration of the IAR were conducted by the author. The training phase was carried out by a graduate student, who was unaware of the design and hypothesis of the experiment. This procedure ensured that the experimenter conducting the critical posttest was unaware of the treatment conditions of the children. The experimenter conducting the training phase of this study exercised extreme care with regard to her affect and tone of voice to ensure that the informative aspects of attribution retraining were not confounded with increased reinforcement value of feedback.

CHAPTER III

RESULTS

The two hypotheses in this study were:

Hypothesis I. This investigation hypothesized that all children receiving partial reinforcement would show greater persistence in attempting to read difficult sentences relative to children receiving success only training.

Hypothesis II. This study further predicted that children who took the least responsibility for lack of effort being the cause of their failures and and who received attribution retraining would show the greatest persistence in the context of attempting to read difficult sentences, relative to all the other children.

A. Treatment Effects

The data are shown in Table 3. Hypothesis I was tested via a (2) High-Low effort x (3) groups analysis of variance on the change scores which yielded the results depicted in Table 4. The main effect for High-Low effort was not significant, $F(1,30) = .07$. The main effect for groups was significant, $F(2,30) = 28.88, p < .01$. An a priori breakdown, employing linear contrasts, revealed the following: contrast 1 (CRF vs all others) $F(1,30) = 48.09, p < .01$. This indicated that children who received partial reinforcement showed greater persistence in

TABLE 3

Means and Standard Deviations of the Number of Sentences Attempted for each Training Condition

Condition	Pretest		Posttest	
	M	SD	M	SD
PRF-Lo	4.1	2.4	6.6	2.7
PRFAR-Lo	4.0	2.4	10.3	4.2
CRF-Lo	3.9	1	3.3	1
PRF-Hi	4.6	2.6	8.3	2
PRFAR-Hi	4.0	1.8	8.1	1.5
CRF-Hi	4.5	1.7	4.1	2.2

Note: PRF-Low partial reinforcement and Low I(-) effort score; PRFAR-Lo = partial reinforcement and attribution retraining and Low I (-) effort score; CRF-Lo = success only and Low I(-) effort score. PRF-Hi; PRFAR-Hi; and CRF-Hi as above only with High I(-) effort scores.

TABLE 4

Analysis of Variance and an a priori Contrasts
 On the Sentences Completed Change Scores

Source	df	MS	F	p less than
High-Low	1	.25	.07	
Groups	2	97.33	28.88	.01
1. CRF vs others (C1)	1	162.05	48.09	.01
2. PRF vs PRFAR (C2)	1	32.62	9.69	.01
High-Low x Groups	2	10.33	3.06	.10
1. High-Low x C1	1	.54	3.06	
2. High-Low x C2	1	20.13	5.97	.025
Within Cells	30	3.37		

Note: "C1" and "C2" refer to contrast 1 and contrast 2.

attempting to read difficult sentences in the posttest than the children who experienced success only, thereby supporting Hypothesis I. Contrast 2 (PRF vs PRFAR) $F(1,30) = 9.69$, $p < .01$, indicated that PRF with attribution retraining led to increased persistence compared to PRF without attribution retraining.

The critical interaction of groups x High-Low effort was found to be of borderline significance $F(2,30) = 3.06$, $p < .10$. However, when variation attributable to the success only groups was partialled out by partitioning of the interaction sums of squares, an interaction attributable to the other four groups was found to be significant $F(1,30) = 5.97$, $p < .025$. This pattern of results is shown in Figure 1, with the High-Low x treatment interaction occurring only in the upper two lines which represent the two PRF groups.

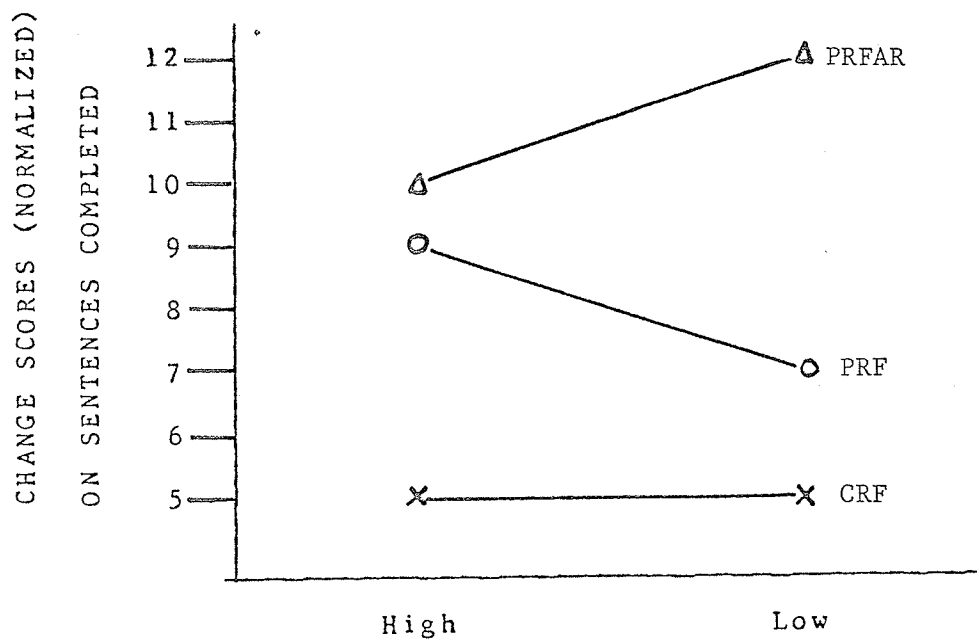
Hypothesis II was tested in the following manner. A breakdown of the interaction, employing Tukey's honestly significant difference test, revealed that the performance of the PRFAR-Lo group was superior to PRFAR-Hi, PRF-Hi, and PRF-Lo ($p < .05$ in all cases).

B. Re-administered Measures and Correlations

It was found employing a (3) groups x Hi-Lo Effort (2) analysis of variance on the change scores the difference between the number of sentences attempted from pretest to posttest of the Hi-Lo effort responses that there

FIGURE 1

INTERACTION OF GROUPS x HI-LO EFFORT



was a main effect for Hi-Lo effort, $F(1,30) = 12.81, p < .01$ (see Table 5). This meant that low effort children showed a uniformly larger increase in taking responsibility for failures than high effort children. This result is to be expected presuming a ceiling effect on the High I(-) scores. An a priori breakdown of the data employing Bonferroni t statistics yielded the following: PRF-Hi vs PRF-Lo, $p < .05$; PRFAR-Hi vs PRFAR-Lo, $p < .05$; CRF-Hi vs CRF-Lo, $p < .05$. This indicated that the PRF-Lo's did not differ from their high counterparts in that they did not significantly change their attributions concerning the reasons for their failures with regard to the effort dimension. However, both the PRF-Lo's and the CRF-Lo's did significantly differ from their high effort counterparts. This indicated that these children tended to take more responsibility for failure on the posttest than they did in the pretest.

There were no consistent changes on the Ability vs Effort subtest scale for any of the groups. For the children in the PRF group the means before and after training were 2.5 and 2; for those in the PRFAR group were 2.6 and 3 and for those in the CRF group the means were 2.9 and 3.

A multiple correlational analysis looking at CTBS scores vs the Ability-Effort subscale (pretest) was not

TABLE 5
Analysis of Variance on the Hi-Lo Effort
Change Scores

Source	df	MS	F	p less than
High vs Low	1	69.54	12.81	.01
Groups	2	1.36	.25	
High-Low x Groups	2	3.86	.71	
Within Subjects	30	5.42		



found to be significant, $r = .13$, $p < .05$. This meant that the children in the study were not adequate judges of their own ability.

C. Manipulation Checks

To ensure that hypothesis II, which refers to failure attributable to lack of effort, was uncorrelated with ability stems and successful outcomes the following manipulation checks were made. These data are reported in Table 5. The I(-) ability responses showed virtually no difference between the High and Low groups, with the means being 2.55 and 2.5, respectively. Both the High and Low groups were virtually the same along the effort dimension with regard to successful outcomes with means of 5.6 and 5, respectively. The means for successful outcomes along the ability dimension were High 6.2 and Low 5.7, $t(34) = .07$, $p < .10$. The overall scores reflecting responsibility for successful outcomes were 11.8 for the Highs and 10.5 for the Lows, $t = .06$, $p < .10$. The overall mean for I scores was 21.4. This is lower than the mean Dweck and Repucci (1973) obtained for their helpless children. (When examining the data in Table 5, it is interesting to note that I(-) is the salient variable in determining a dramatically low I score.)

TABLE 6

Mean Pretest Internal Responsibility Scores for
 Items with Positive and Negative Outcomes and
 Ability and Effort Stems as Measured by the IAR
 for High and Low Effort for the Total Group

Subjects	I	I(+)	I(-) eff	I(-) ab	I(+) eff	I(+) ab	I(-)
High	24	11.8	9.6	2.55	5.6	6.2	12.15
Low	18.8	10.5	5.8	2.50	5	5.7	8.3
Total	21.4	11.1	7.7	2.50	5.3	5.9	10.2

CHAPTER IV

DISCUSSION

The present results indicate that persistence in children's reading behavior is jointly facilitated by PRF and attribution retraining. This is in agreement with the results obtained by Chapin and Dyck (1976). More importantly, the effectiveness of the attribution retraining procedure utilized appears to be dependent upon the amount of responsibility a child takes for his failure with regard to effort. This investigation began with the assumption that the way in which a child views the reason for his failure should dictate the type of attribution retraining he is given. It was predicted that training along the effort dimension would most significantly benefit those children who were least likely to target lack of effort as the cause for academic failure. The results strongly support this prediction. That is, children who scored low on the effort dimension with respect to failure and who received attribution retraining (i.e., they were told they failed because they did not try hard enough) demonstrated the greatest persistence in the context of failure. It is noteworthy that when children did take responsibility for their failures (i.e., saw lack of effort as an explanation as opposed to external alternatives) the

presence or absence of attribution retraining did not affect their performance on the posttest, in fact, the means for the two groups were virtually identical. However, while children who were low in taking responsibility for failure and who received partial reinforcement alone (PRF-Lo) were more persistent than the children in the CRF group; they were significantly inferior to the remaining experimental groups. This suggests that the attribution retraining procedure powerfully enhanced the performance of children demonstrating a deficit in reinforcement responsibility for failure on the effort dimension.

The fact that the PRFAR groups were superior to the PRF groups requires comment. The PRFAR mean was raised by the scores of the children in the low effort group and the PRF mean lowered, in an almost one to one correspondence, by low effort children. This is noteworthy in light of the Chapin and Dyck (1976) study which did not show any significant difference between these two groups. It should be noted that there was no distinction made between children, along any type of reinforcement responsibility dimension, in the five treatment groups in that study. Therefore, it is possible that a disproportionate number of High effort children were advantageously assigned to these groups. This would account for the discrepant results.

The variation in the means reflected by the different

treatment conditions requires some discussion at this point. As was mentioned previously, according to attribution theory (Weiner, 1972; Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum, 1971) attributions which are variable (regardless of internality or externality) i.e., effort and chance produce greater persistence in the context of failure situations than attributions to fixed factors such as ability and task difficulty. The idea of training from fixed to variable factors was the rationale behind the Dweck (1975) study. Chapin and Dyck (1976) demonstrated that partial reinforcement procedures accounted for a significant proportion of the variance in an attribution retraining procedure. Chapin and Dyck interpreted these results in terms of stimulus generalization decrement (Capaldi, 1967). In basic learning research increased persistence associated with multiple PRF's follows in a straight forward manner from the assumptions that (a) the internal stimulus associated with a non-reinforced trial will be conditioned to the instrumental response on a subsequent reinforced trial, resulting in an association between the internal stimulus and the response; (b) relatively longer PRF's are more similar to the stimuli experienced in the latter stages of extinction; and (c) the decrement in responding during extinction depends on the similarity between those stimuli to which the instrumental response is conditioned and the stimuli encountered in

extinction. In the Chapin and Dyck (1976) study and in the present study, the posttest may be viewed as an analogue to the extinction test used in basic learning research. Consequently, children who experienced multiple PRF's in training learned to respond to a "stimulus complex" that was similar to the posttest. In other words, partial reinforcement may have functioned to make training and posttest contexts more difficult to discriminate.

The phenomenon of the partial reinforcement effect as accounted for by basic learning research is not at variance with attribution theory. Partial reinforcement may be viewed as conceptually analogous to a chance situation. Furthermore, partial reinforcement may be seen as experiential attribution retraining (as distinguished from verbal instructions to the effect that the experimenter is controlling outcomes, as in the work of Klein, Fencil-Morse and Seligman (1976). Finally, depending on a particular child's learning deficit, training on variable and fixed dimensions may function in an additive manner. The children in this investigation were placed in one of three conditions: chance alone (PRF); chance plus effort training (PRFAR); or success only (CRF). Prior to being assigned to experimental conditions, the children were designated as being High or Low with regard to the amount of responsibility they were willing to take for lack of effort being

the cause of their failures.

The children in the High effort group may be viewed as individuals who attributed failure to the variable factor of lack of effort, i.e., they admitted that they did not try much in difficult achievement related situations (perhaps because they believed it would be of little use). Training them along the effort dimension would thus be tantamount to telling them something which was consonant with their existing opinions, or, in other words, not providing them with new information. Therefore, the presence or absence of attribution retraining in the High effort partial reinforcement (chance) groups (PRF and PRFAR) had no effect upon their posttest performance as can be seen from their virtually identical posttest means. When the chance groups in the High effort condition are viewed in contrast to the CRF group it may be further noted that the fact that these children did ascribe failure to a variable factor (effort) did not enhance their performance in the context of success only. Therefore, the combination of the causal elements of effort plus chance yielded greater persistence than ascriptions to effort alone.

When viewing the children in the Low effort group it can be seen that the PRF and the PRFAR differed significantly from each other and from the CRF group. The PRF group had encountered chance alone in the training situation. They

did not take their own lack of effort into account when evaluating the reasons for their failure. Although the element of chance accounted for a significant proportion of the variance, this group did significantly worse than their High PRF counterparts who were in a chance treatment condition but who also had tended to ascribe failure to lack of effort. The PRFAR-Lo group showed the most persistence relative to all the other groups. They had the reasons for their failure re-labeled for them. Put more specifically, they originally had a tendency to blame their failures on external determinants such as task difficulty and powerful others and the attribution retraining procedure utilized in this study provided them with an alternative explanation. Thus, the combination of being told that an effortful response would increase the probability of success in combination with the experience of chance, produced the most persistence. As in the High condition, the CRF group showed no difference in the number of difficult sentences attempted in the posttest as compared to the pretest. In both CRF conditions it did not seem to matter how much reinforcement responsibility was present. It seems then that children need a situation which provides them with an opportunity for hypothesis conformation. This view is consistent with the findings reported by Nisbett and Valins (1971).

The results of this investigation indicate that training along the variable dimension may not be the definitive procedure with regard to enhancing motivation as Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum (1971) seem to suggest. While it is true that the variable dimension appears to be salient in that it accounts for a significant proportion of the variance, the results obtained suggest that the interaction of chance plus attribution retraining along a dimension which is dissonant from a previously held belief system produces the greatest behavioral change. It was the goal of this research to begin to make refinements with respect to placing children in appropriate treatment groups. Since the "target" group obtained a significantly higher mean than any of the other groups, there is reason to believe that attribution retraining has a differential effect across individuals. Using the Weiner et al. (1971) reasoning, the PRFAR-Hi group should have done as well as their Low effort counterparts since they were attributing their failures to variable factors, yet they attempted significantly fewer sentences in the posttest. It is interesting to note that the High effort children tended to rate themselves lower in ability, on the five interpolated ability versus effort questions, than the children in the Low effort group. More precisely, 55% of the High effort children attributed their failure to lack of ability, while only 38% of the Low effort children

attributed their failure to lack of competence when forced to choose between two internal alternatives. One might speculate that helpless children who take responsibility for failure are doing it at their own expense. In other words, they can try but it really doesn't matter how hard they try since they see themselves as lacking the ability to make the trying worthwhile. Perhaps training children who see themselves as having low ability with a procedure that enhances their sense of competence would be of greater value. This argument is strengthened by the data in this study which suggested that there was virtually no correlation between actual and perceived ability. There is empirical support in the literature for the notion of training along fixed (ability, task difficulty, and even placebos) factors in an effort to increase persistence (e.g., Hiroto, 1974; Weiner and Sierad, 1975; Klein, Fencil-Morse and Seligman, 1976).

As noted in the results section of this report, there were attributional shifts with regard to taking increased responsibility for failure among certain children in the low effort group. Three phenomena emerge from the results: 1. No cognitive shift (no difference in the amount of responsibility for failure in terms of effort) but a behavioral shift (increased persistence in the context of attempting to read difficult sentences) (group PRF); 2. a cognitive shift and a behavioral shift (group

PRFAR); 3. a cognitive but no corresponding behavioral shift (group CRF). It is speculated that the PRF group did not show any attributional changes since the treatment they received did not alter their cognitive schemata on the particular dimension indexed in this study. They showed a behavioral change as a function of performance monitoring, that is, they had feedback on their behavior which included success and failure. The IAR external questions are primarily related to task difficulty and powerful others situations, therefore, it was not possible to determine whether ascriptions to chance (as discussed previously) were changed. Since the PRFAR-Low group showed the most persistence, it is suggested that the enhanced performance in this group was a function of cognitive restructuring relative to their High counterparts. In contrast, the CRF group may have altered their reactions to failure situations depicted in the scale as a result of having been exposed to continuous success. In other words, they inferred that they were in control (prior to the posttest) because they did so well. This is consistent with Bem's (1972) position.

The performance of the CRF or success only group requires further comment. As did the Dweck (1975) and Chapin and Dyck (1976) investigations, the present results re-affirm the inadequacy of procedures of this type in

helping children to persevere in the face of difficulty. Many primary and elementary educational systems employ just this type of approach by teaching very simple material at first and gradually "fading in" more difficult material ensuring optimal success at each level. Great effort is expended in "keeping the child at his level". The most dramatic form of this approach is the programmed learning technique developed by Skinner (1968). Each student proceeds at his own speed, feedback and reinforcement are immediate. Most written programs approximate 100% reinforcement schedules. The student is guided step by step from easy to more difficult problems, thereby virtually eliminating failure. As noted by Chapin and Dyck (1976) this procedure has empirical precedent in the learning literature. Terrace (1966) used a fading in procedure with pigeons which enabled them to make extremely difficult discriminations without errors. However, an important aspect of errorless training is often overlooked. When the positive stimulus was no longer reinforced, i.e., extinguished, subjects that were trained with an errorless procedure demonstrated vastly greater disruption in their performance relative to subjects that had been trained with errors. Seligman (1975) in discussing university students' failures, stated that many of his students "through too

much success, have developed insufficient coping mechanisms. Their parents and their teachers, out of a misguided sense of kindness, made things much too easy for them.... Unless a young person confronts anxiety, boredom, pain and trouble, and masters them by his own actions, he will develop an impoverished sense of his own competence."

Most IQ and achievement tests have questions arranged in a sequential order, that is, they proceed from easy to difficult items. The examinee is set up to believe that he can perform well on a test and then encounters several items which he cannot answer. This often results in the individual giving up. As early as the nineteen forties, Hutt (1947) investigated the hypothesis that the ascending test format could be disruptive for individuals with a low tolerance for frustration. Employing two versions of the Stanford-Binet, one ascending and one with a mixed format, he tested this hypothesis. The results indicated that children low in frustration tolerance performed significantly better on the mixed format test.

It would seem then that there is one set of variables operating in the acquisition of behavior and a different set of variables that effectively maintain behavior in the context of non-reward or failure. A response is more quickly acquired when it reliably predicts success, however, once the response is acquired, occasional failure teaches

the individual how to cope with its disruptive aspects.

Although the results reported here are the function of an experimental situation, there is some evidence to suggest that the type of procedures employed generalize to the classroom situation. Chapin and Dyck (1976) did not formally report the after effects of their study, however, on the basis of informal personal communication with the room teachers (who were blind to the groupings of the children) it is clear that the children who had shown increased persistence in the study generally performed at a higher level in the classroom. Self-reports of the children involved were of a similar nature. Dweck (1975) noted that verbal reports from teachers involved in her study also indicated that students receiving attribution retraining showed different attitudes toward failure.

Further study in this area would have to include more refinements concerning the assignment of children to treatment groups. This investigation concerned itself with the effort dimension as it related to failure situations; future studies might examine the effects of training on the ability dimension. Additionally, a further refinement seems in order. This study did not separate the variables of sex and age of children or experimentees, but rather held them constant across groups. Recently, Dweck and Busch (1976) found that boys and girls responded

differently when the sex and age of the feedback administrator was systematically varied. Girls showed little improvement in performance on a digit letter substitution task following failure feedback from an adult or female, however, they showed rapid improvement with a peer or male. Boys showed the opposite trend in that they responded more favorably to adults and females. Future study in this area might also consider taking sex of the children and sex and age of the experimenter into account in an attempt to optimize performance. While the research reported here was indicative of remedial procedures, this investigation has implications for further study in the area of prevention of academic dysfunctioning. For example, the partial reinforcement procedures employed in this study could be systematically investigated with respect to generalizability to the total classroom. Procedurally, this type of investigation could examine the impact of partial reinforcement on both the presentation of material and subsequent test format.

In summary, this investigation replicated the findings of Chapin and Dyck (1976) vis-avis the inadequacy of success only procedures. Further support was found for the hypothesis that cognitive restructuring or attribution retraining should match the child's pre-existing reinforcement responsibility deficit. Finally, it demonstrated that

attribution retraining produced both behavioral and cognitive shifts which, in a certain group of children, yielded the most superior performance.

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APPENDICES

APPENDIX A

INTERPOLATED ABILITY VERSUS EFFORT SUBSCALE

- I. When you read a story and can't remember much of it, is it usually
 - a. because you weren't interested in the story
 - b. because you couldn't understand it?
- II. Suppose you read a story and you cannot answer the questions at the end, is it usually because
 - a. you could not read many of the words
 - b. you did not really pay attention to what you were reading?
- III. When you find reading a story difficult, is it usually because
 - a. you really haven't studied enough
 - b. you aren't smart enough to do it?
- IV. When you stop reading a book before you come to the end, is it usually because
 - a. you could not understand it
 - b. you didn't try hard enough?
- V. When you read an assignment and it doesn't make sense to you, is it because
 - a. you haven't really been working as hard as you can
 - b. because you don't read well?

APPENDIX B

SAMPLE SENTENCES

1. Correct (C) sentence:

People passing a particular meadow near the king's palace began to hear sounds coming from a tall clump of weeds.

2. Incorrect (I) sentence:

The doctors tried to explain why there was so much inaccuracy in their work, but their analysis was not persuasive.

APPENDIX C

SENTENCES ATTEMPTED IN PRETEST AND POSTTEST

HIGH EFFORT				LOW EFFORT			
Sex	Grade	Number of Sentences attempted		Sex	Grade	Number of Sentences attempted	
		Pretest	Posttest			Pretest	Posttest
PRF							
M	5	4	6	F	4	2	4
M	6	8	11	M	5	2	5
M	5	5	7	M	4	2	4
M	5	1	10	F	5	8	10
F	4	2	6	M	6	4	6
F	6	8	10	M	6	7	11
PRF	AR						
M	4	5	8	M	4	7	17
F	4	5	11	F	4	2	6
M	5	7	9	M	6	2	7
M	5	3	6	F	6	7	15
M	6	2	7	M	5	3	10
F	6	2	8	M	5	3	7
CRF							
M	4	4	6	M	4	2	2
F	5	2	2	M	4	3	3
M	5	7	6	M	5	4	2
M	6	5	2	F	6	5	4
F	6	3	2	M	6	4	4
F	5	6	7	F	5	5	5