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The Effects of Praise and/or Reproof on Serial Learning in Underachievers

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by

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ABSTRACT

The purpose of this study was to determine the relative effectiveness of praise and/or reproof on a serial learning task in a group of underachievers. When underachievement is associated with psychological factors, rather than physiological, sociological, or pedagogical factors, it was assumed that underachievers had a need for success and a fear of failure. This led to the following hypotheses:

1. Underachievers who receive positive verbal reinforcement (praise) will require fewer trials to master a list of sight vocabulary words than underachievers who either receive negative verbal reinforcement (reproof), or a combination of positive and negative verbal reinforcement (praise-reproof), or no verbal reinforcement (silence).

2. Underachievers who receive reproof will require more trials to master a list of sight vocabulary words than achievers who receive reproof.

3. Underachievers who receive praise will not require more trials to master a list of sight vocabulary words than achievers who receive praise.

Fourth grade males from a middle-class population were categorized as underachievers or achievers on the basis of classroom teacher ratings. All subjects had an IQ within the range of 100 to 116. While learning a list of sight vocabulary words presented in

serial form by a memory drum, they were given one of the following treatments: praise, reproof, praise-reproof, and silence. Verbal reinforcement was contingent upon a specific response, either right or wrong, and was presented on a variable-ratio schedule.

The results indicated that underachievers receiving only praise did significantly better than underachievers receiving only reproof and underachievers receiving no verbal reinforcement (silence). There was no significant difference between underachievers receiving only praise and underachievers receiving a combination of praise and reproof. When underachievers received only reproof they could not learn at a rate which was commensurate with achievers who received only reproof. Yet when underachievers received only praise they could learn at a rate which was equivalent to achievers who received only praise.

These results were seen as having implications for conceptualizing a relationship between psychological factors and underachievement and in making a learning experience more profitable for the underachiever. Under conditions in which underachievers continually experience success in the form of praise, they can be highly productive. Praise appears to be an effective verbal reinforcer for facilitating learning in underachievers because it fulfills their need for success.

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CHAPTER I

INTRODUCTION

Our schools, whether public or private, have been given a major role in promoting the cognitive and affective development of each and every child. There is some dissatisfaction, however, with the degree of success that our educational system has had in meeting this responsibility.

> Despite the great strides made by American education over the last 50 years, we are still far-short of the goal of enabling and encouraging every young person to develop his full potential. The resulting waste of rich human resources is enormous and is deeply rooted in our educational system, right down to the earliest years (Raph, Goldberg, and Passow, pp. 1-2).

Children who are unable to learn and to perform in the classroom at a level commensurate with their judged cognitive abilities have been categorized as underachievers (Thorndike, 1963). Differences in the techniques and criterion used in identifying underachievers can lead to heterogenous populations (Shaw, 1964). Yet a factor common to most groups of students identified as underachievers is the implication that they have the potentiality for attaining a higher level of academic achievement.

In meeting the challenge of underachievement, Terman has stated:

> Circumstances [which] affect the fruition of human talent are questions of such transcendent importance that they should be investigated by every method that promises the slightest reduction of our ignorance (Raph, Goldberg, and Passow, 1966, p. 5).

One of the methods that has been explored in attempting to resolve the problem of underachievement is the use of reinforcement for desirable academic behavior. The concept of reinforcement has its origins in learning theory.

Edward Thorndike proposed that among the many responses an individual might make to the same situation, those responses that were followed by satisfaction to the individual would be more firmly connected (bonded) to the situation. Consequently, when the situation reoccurred, the responses followed by satisfaction would have a greater probability of appearing. On the other hand, responses to a situation that were followed by discomfort to the individual would have their connections to it weakened. These responses were less likely to appear when the situation reoccurred (Kimble, 1961, p. 10).

The terms satisfiers (satisfaction) and annoyers (discomfort) were later replaced with the terms positive and negative reinforcers (Kimble, 1961, p. 66). For the purposes of this study, the following definition of positive and negative reinforcers will be used:

> An event is identified as a positive reinforcer when its presentation, following (contingent upon) the occurrence of a response, increases the probability of occurrence of that class of responses. Responses are also strengthened by negative reinforcers; these consist of noxious or aversive events which are removed if the response occurs (Glaser, 1969, 709).

Reinforcement can be verbal or nonverbal. Statements connoting praise would be considered positive verbal reinforcers and statements connoting reproof would be considered negative verbal reinforcers.

The effects of verbal reinforcement upon learning in a classroom were studied by Hurlock (1925). Using various modifications of an arithmetic test as a measure of achievement, Hurlock concluded that "...regardless of age, sex, initial ability or accuracy, praise is decidedly the most effective of the three incentives here investigated [for facilitating learning] (1925, p. 158)."

Subsequent studies also found verbal reinforcement to have a direct influence upon the learning and performance of children (Kennedy and Willcutt, 1964). It was only recently, however, that attention was directed toward the effects of verbal reinforcement upon the learning of a group of children categorized as underachievers (Van De Riet, 1964). Van De Riet found that negative verbal reinforcement was more effective in facilitating learning

than positive verbal reinforcement.

Van De Riet's results were related to the hypothesis that underachievers have a fear of success and a need for failure. The finding that reproof facilitated learning while praise inhibited learning supported this hypothesis.

Underachievers have been typically described as having strong feelings of inadequacy (Bricklin and Bricklin, 1967), to be self-disparaging (Roth and Puri, 1967), and to have a fear of failure (Holt, 1964). Therefore, it would seem that any condition which highlighted their sense of inadequacy might adversely affect their learning. As reproof conveys a message of failure and inadequacy, praise might be expected to be the most effective verbal reinforcer for facilitating learning in underachievers.

The apparent contradiction between those who would suggest that praise is more effective than reproof for facilitating learning in underachievers and Van De Riet's (1964) findings appears to relate to two factors: the method that Van De Riet used to identify underachievers and the type and schedule of verbal reinforcement that was provided to them. Van De Riet identified underachievers through the use of achievement test results and gave them a single verbal statement (reinforcer) between the administration of two tasks. The implications of these factors will be delineated further in the review of the literature (Chapter II) and in the discussion and conclusions of the study (Chapter V).

In focusing on the relationship between verbal reinforcement and learning in underachievers, a statement of the problem and purpose of this study will be given. This statement will be followed by the significance of the problem and limitations of the study. The research hypotheses to be tested will then be stated.

Statement of the Problem and Purpose of the Study

The problem to be dealt with in this study is which verbal reinforcer, praise and/or reproof, is most effective for facilitating learning in underachievers. In dealing with this problem, the purpose of this study will be to determine the relative effectiveness of praise and/or reproof on a serial learning task in a group of underachievers.

Significance of the Problem

The relative effectiveness of praise and/or reproof for facilitating learning in underachievers has both theoretical and practical significance.

Different theoretical formulations have been offered to explain the relationship between psychological factors and underachievement. These different formulations have associated underachievement with a need for success (Bricklin and Bricklin, 1967) and, conversely, with a fear of success (Kunst, 1959). The verbal reinforcement paradigm and methodology employed in this

study will have relevance to these formulations. If underachievers have a need for success one might expect that positive verbal reinforcement (praise) would facilitate learning. However, if underachievers have a need for failure, negative verbal reinforcement (reproof) might be expected to facilitate learning.

A variety of people have the opportunity for interacting with the underachiever in an effort to make him more productive. These may include the classroom teacher, special education teacher, counselor, aide, and parent. In order to make these interpersonal relationships as effective as possible, it would be helpful to have an appropriate frame of reference regarding the effects of praise and reproof upon the underachiever's learning.

The relative effectiveness of different types of verbal reinforcement upon learning in underachievers also has significance in curriculum planning and implementation. The task to be given to subjects in this study has some similarity to programmed learning. The task requires the subject to make a response and then offers him feedback as to whether his response was correct or incorrect. The experimental design of this study will permit comparisons between subjects who receive different types of verbal reinforcement and informational feedback from the apparatus with subjects who receive only informational feedback and no verbal reinforcement. These comparisons may indicate that certain types of verbal reinforcement are more effective in facilitating learning when combined with informational feedback as compared with infor-

mational feedback without verbal reinforcement. Informational feedback without verbal reinforcement is a characteristic of many programmed materials.

Limitations

This study will focus on the effects of different types of verbal reinforcement upon achievement performances in underachievers. The relationship of verbal reinforcement to level of aspiration, expectancy, achievement need, and anxiety level will not be explored in this study.

It was assumed that when underachievement was attributed to psychological factors it would be characterized by a poor self-concept. This assumption stemmed from the findings of previous studies. These studies indicated that underachievers feel inadequate (Combs, 1964; Fink, 1965), are self-disparaging (Roth and Meyersburg, 1964), and have difficulties in self-assertion (Morrison, 1969). A direct measure of these and other personality characteristics in the sample employed in this study was not obtained.

Using poor self-concept as a frame of reference, a dichotomy between fear of failure and a fear of success was made. The purpose of this dichotomy was to generate research hypotheses regarding the effects of verbal reinforcement upon learning in underachievers. This dichotomy was not intended to serve as an inclusive diagnostic concept. There may be some underachievers who

do not neatly fit into the two categories specified. The incidence of such cases was not measured in this study.

Verbal reinforcement as defined in this study includes a combination of both verbal comments and differential behavioral cues given by the experimenter. The verbal comments connote either praise or reproof, e.g. "You're doing fine."; "You're not too good at this." Behavioral cues involve a combination of smiles, nodding of the head, and vocal inflections, which also convey either praise or reproof.

Hypotheses

1. Underachievers who receive positive verbal reinforcement (praise) will require fewer trials to master a list of sight vocabulary words than underachievers who either receive negative verbal reinforcement (reproof), or a combination of positive and negative verbal reinforcement (praise-reproof), or no verbal reinforcement (silence).

2. Underachievers who receive reproof will require more trials to master a list of sight vocabulary words than achievers who receive reproof.

3. Underachievers who receive praise will not require more trials to master a list of sight vocabulary words than achievers who receive praise.

Summary

This chapter has been concerned with the problem of academic underachievement and the use of verbal reinforcement as one method of amelioration. A statement of the problem and purpose of this study was made. This statement was followed by the significance of the problem and the limitations of the study. Research hypotheses were then stated.

In Chapter II a review of the literature related to the problem will be presented. Chapter III will contain the methodology and procedures used in selecting and testing the subjects of the study. The results will be given in Chapter IV. A discussion of the results and conclusions of the study will be presented in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

In reviewing the literature related to the effects of verbal reinforcement upon learning in underachievers, the phenomenon of underachievement will be initially explored. The literature dealing with verbal reinforcement will then be presented. A summary of the review of the literature at the end of this chapter will highlight those factors dealt with in the studies done to date which have relevance for this study.

Underachievement

Many different factors must be taken into consideration when attempting to understand and deal with the problem of academic underachievement. For the purposes of this study these factors will be classified under the sub-sections of Definition and Incidence, and Etiology.

Definition and Incidence

The term underachiever has traditionally encompassed those children who are unable to learn and to perform in the classroom at a level commensurate with their judged mental ability (Jackson, 1968). It is possible, though, for divergent samples of underachievers to be generated as a result of differences in the cri-

terion measures used to define the groups.

> ...the term 'academic underachievement' has been used to refer to groups of individuals working on different academic levels, with differing levels of ability, and with different levels of achievement. To further confuse the issue, different criteria of achievement and of ability have been used (Shaw, 1964, p. 325).

An assessment of a student's level of academic achievement may be obtained from a standardized achievement test or from the classroom teacher's evaluation. The standardized achievement test results are generally given in the form of percentiles, grade-equivalents, stanines, and other statistical measures. The classroom teacher generally reports the student's level of academic achievement in the form of ratings (grades).

One important difference between the standardized achievement test and the teacher ratings is the emphasis upon learning versus performance. Teacher ratings of academic achievement are based upon classroom observation and daily contact with the student. Consequently, teacher ratings tend to be more reflective of the student's productivity, or consistency of performance, than the amount or level of material that he has assimilated. A standardized achievement test is designed to measure the quantity and quality of material learned, rather than the consistency of its application.

It is not unusual for a teacher to rate a student who obtains

a score on a standardized achievement test that is consistent with his judged mental ability as a underachiever. In these instances, learning is taking place (standardized achievement test results), but the learning is not being consistently applied in the classroom (teacher ratings) (Shaw, 1964).

> A group of students identified as underachievers by their grades, however, will not necessarily be the same group designated as underachievers by their achievement test scores...The children who score well on the achievement tests, but who have received poor grades, have been learning the material. Their grades may indicate an inability or unwillingness to produce the required work, or to cooperate with the teacher,.. (Kessler, 1966, p. 203).

Morrison (1969) hypothesized that students who were identified as underachievers when grade point averages were used as a criterion measure would not be identified when standardized achievement test results were used as the criterion. This hypothesis stemmed from the proposition that the student classified as a underachiever can often obtain good scores on standardized aptitude and achievement tests, yet maintain a low level of actual performance in the classroom. This low level of performance would be reflected in grades. The results of Morrison's research supported this hypothesis.

Mondani and Tutko (1969) found that underachievers often do not appear to be attentive to classroom lessons; however, in com-

parison with achievers, they do retain a greater amount of material which is incidental to the lesson. This would further suggest that underachievers are learning more than their behavior in the classroom might indicate.

Miller (1961) suggests that teacher ratings are one of the most valid and reliable techniques for identifying underachievers. Myklebust and Boshes (1969) support this contention in their work with children who have learning problems.

When grades or teacher ratings are available, a popular method for identifying underachievers is to establish grade or rating point cut-off scores. The use of grade or rating point measures as a criterion to differentiate students according to their achievement status requires that all students be equated for level of intelligence. Those students falling below the selected criterion are classified as underachievers. Conversely, achievers are those students having a grade or rating point average above the criterion measure (Roth and Puri, 1967).

In addition to the use of grade or rating point cut-off scores, other methods, such as a regression analysis, have been used to define and locate underachievers (Annesley, Odhner, Madoff, and Chansky, 1970).

Studies have indicated that the incidence of underachievement is higher in males than in females.

> One of the most striking and agreed upon characteristics of underachievement is that

> it is predominantly a male problem. A review of studies which have explored this problem would indicate that approximately half of all males who are above average in ability may be considered underachievers. The corresponding figure for females is approximately 25 per cent (Fine, 1967, p. 20).

Research has not only indicated that "academic underachievement was primarily a male phenomenon" (Hilliard and Roth, 1968, p. 425), but that its onset occurs at an early level of elementary school (Fitzsimmons, Cheever, Leonard, and Macunovich, 1969; Shaw and McCuen, 1960).

By analyzing grades that underachieving high school students obtained throughout their school career, Shaw and McCuen (1960) concluded that the chronicity of underachievement was more severe in males as compared with females. The male underachievers were noted to have been performing inadequately since first grade; but female underachievers had done poorly since ninth grade.

Fitzsimmons, et. al., (1969) discovered that among a group of underachieving high school students, seventy-five percent had demonstrated poor performance or experienced their first failure in fourth grade.

Etiology

The major factors which can lead to a significant discrepancy between a child's daily accomplishments in the classroom and his

potentiality for a higher level of performance have been grouped into four broad categories: psychological, physiological, sociological, and pedagogical (Bricklin and Bricklin, 1967). Bricklin and Bricklin have estimated that ninety per cent of all underachievement can be related to psychological factors.

Physiological factors that might affect a child's level of academic achievement include physical handicaps, sensory deficits, and brain damage. Among the sociological influences affecting academic achievement are environmental deprivation and a lack of positive values toward education in a culture. Inadequate educational facilities, a lack of materials, and improper instructional methods would be grouped under pedagogical factors.

The main focus of this research will be on underachievement associated with psychological or personality factors. There are specific personality characteristics that have been found to inhibit the application of the student's full capabilities in the classroom. Given individual differences in personality, there is a degree of commonality in the personality pattern manifested by the underachiever. This pattern includes a depreciated self-concept, difficulties with constructive self assertion, and resistance toward authority (Dudek and Lester, 1968). A review of these characteristics will be presented in this part of the study.

The self-concept of the underachiever has been considered one of the most promising areas of investigation in the study of personality and underachievement (Fink, 1965). The lack of self-con-

fidence that is characteristic of a child with a depreciated self-concept can influence the degree to which he will devote his energies toward successfully completing a task.

> The underachiever cannot tolerate even the possibility of failure. He demands instantaneous success because even the most minor setback reminds him that he might be a total failure. This fear is so intense that his self-confidence abandons him when there is even the slightest possibility of failure. This is why the underachiever will work at something only so long as he is being successful. This is why the underachiever will not get interested in a thing unless he firmly knows he can be good at it (Bricklin and Bricklin, 1967, p. 57).

Combs (1964) compared a group of students categorized as underachievers and achievers on a battery of personality tests. The underachievers differed significantly in the following areas from the achievers: they saw themselves as being less adequate, less acceptable to others, had an inefficient and less effective approach to problems, and showed less freedom in the expression of their emotions. Combs described the underachiever as having a strong need for a sense of personal adequacy and to be accepted by peers and/or adults. Their overwhelming need for success led to a restriction in their activities as underachievers could not risk failure.

Fink (1965) postulated a relationship between negative self-concept and underachievement. He matched students according to their age, sex, and intelligence and categorized them a under-

achievers or achievers according to their grade point average. Achievers had a grade point average above the class median; underachievers had a grade point average below the class median. A battery of psychological tests indicated that only the male underachievers had a significanly greater incidence of inadequate self-concept.

Shaw, Edson, and Bell (1960) also found that male underachievers seemed to have more negative feelings about themselves than do male achievers.

In his teaching experience, Holt (1964) has observed that those students who were underachieving had developed self-limiting and self-defeating strategies in the classroom. He saw them as being "afraid of failing, afraid of being kept back, afraid of being called stupid, afraid of feeling themselves stupid (p. 39)."

Roth and Meyersburg (1963) have commented on the self-perpetuating nature of the underachiever's self-disparagement:

> Each experience of devaluation leads to increments in self disparagement and the level of anxiety is severely taxed due to the already excessive production of anxiety from previous disparagement, the inability to cope with the distress feeds back in terms of further self depreciation, thus establishing a destructive circular process which tends to perpetuate the disorder (p. 9).

The difficulty that an underachiever has in constructive self-assertion can be related to his reluctance to express his anger in an open and self satisfying manner (Bricklin and Bricklin, 1967).

Using the Rorschach Inkblot Test as a technique for assessing personality characteristics, Bricklin and Bricklin found underachievers to project more frustration on to their environment than achievers and had a greater frequency of perceptions involving debilitation, castration, and incapacity. The greater degree of assertiveness evidenced by achievers was related to their greater sense of inner freedom and initiative.

Shaw and Grubb (1958) administered various personality tests to males and females identified as underachievers or achievers. The results of their investigation indicated significant differences between male achievers and underachievers, but no significant differences between females. A greater amount of hostility on the majority of personality tests was evident for the male underachievers when compared with the remaining groups.

Dudek and Lester's (1968) research suggested that the underachiever dealt with his hostility through passive resistance and/or withdrawal into fantasy. No overt rebellion to authority was evident. Rather, underachievers were described as compliant, cooperative, and unassertive.

Roth and Puri (1967) state that essential to the description of the underachiever is the assumption that hostility is directed inward and rarely expressed overtly. Their study of underachievers and achievers from third grade through senior high school supported this hypothesis for males.

The difficulty that the underachiever seems to have in expressing his feelings appropriately has been observed by Walsh (1956). Underachieving males were observed to exhibit a defensive behavioral style characterized by compliance, evasion, or negativism in a projective doll play situation.

Morrison (1969) hypothesized that underachievement represents a safe means of expressing anger. Using various cards from the Thematic Apperception Test to measure hostility, she found fifth graders who were classified as underachievers to show a greater amount of hostility towards authority than those students classified as achievers. Teacher ratings indicated, however, that underachievers displayed more traits associated with passive resistance than did achievers.

Kirk (1952) and Roth and Meyersburg (1963) contend that underachievement represents, in many cases, a means of expressing anger at a family member who has placed unrealistic expectations on the child. The child is unable to express his hostility directly and must use a substitute route.

A passive resistance to the demands of authority enables the underachiever to express his anger in a disguised manner. Fine (1967) has paraphrased this pattern: "I am angry. I want to hurt you. I want to cause you grief and anxiety and expense; I want to draw your zest and energy--but I don't want to get caught (p. 86)."

Passive resistance can be as frustrating to those who must deal with it as overt expressions of anger:

> Ghandi in his time, and Martin Luther King in our time have demonstrated the juggernaut power of passive resistance...Such techniques seem to come naturally to youngsters; and the slow, stubborn resistance of a quietly furious child is perhaps the most frustrating force an adult can meet...(Fine, 1967, p. 89).

Underachievement has also been related to an unconscious need for resisting learning because it symbolizes success, which can be very anxiety provoking for certain children. Success in a competitive academic setting is fraught with danger as it symbolizes an unresolved Oedipal conflict (Kunst, 1959). The child fears winning the parent of the opposite sex. Success invites fear of retaliation from the parent of the same sex, loss of parental love, a feeling of being incapable of supplanting one parent, and strong guilt feelings. As success can be highly dangerous, failure is the more comfortable of the two alternatives.

This pattern of underachievement tends to be more characteristic of the male than of the female underachiever. According to this theory the father communicates to the son that he does not want him as a competitor for the mother's affection. Father and son can be close only as long as the son remains submissive. The son cannot successfully compete as he will incur the wrath of the father. This fear pervades his entire life style and he is unable to excell in any activity (Bricklin and Bricklin, 1967).

Verbal Reinforcement

Many studies have investigated the effectiveness of verbal reinforcement upon the learning and performance of children in a variety of tasks. A lack of consistency in the results of these studies is apparent. Some have found positive verbal reinforcement in the form of praise to be the most effective reinforcer for learning, while others have found negative verbal reinforcement in the form of reproof to be the most effective reinforcer for learning.

Differences in subjects, examiners, tasks, and reinforcement have, in large measure, accounted for the discrepancy in the results of studies assessing the relative effects of verbal reinforcement upon learning and performance.

A review of the pertinent studies which reflect these different factors and have relevance to this study will be grouped under the following categories: Subject Variables, Examiner Variables, Task Variables, and Reinforcement Variables. Some studies will overlap into more than one of the designated categories.

Subject Variables

Hurlock's (1925) early research into the effectiveness of different types of verbal reinforcement upon the learning of students in a classroom situation found praise rather than reproof increased achievement level. In their work with students ranging

in age from nine to eleven years, Willcutt and Kennedy (1963) also concluded that praise was more effective than reproof in facilitating learning. Kennedy and Willcutt (1965) found that praise tended to have its greatest effects in facilitating the learning of second and fourth grade students.

A variety of subjects have been employed in research related to verbal reinforcement and learning. These subjects have included mental defectives (Zigler, Hagdon, and Stevenson, 1958), introverts and extraverts (Forlano and Axelrod, 1937), and negroes (Vega, 1964). It is only recently, however, that a student's level of academic achievement has been taken into consideration when assessing the effects of verbal reinforcement upon learning (Van De Riet, 1964).

Van De Riet classifed male students from grades four, five, and six as underachievers or achievers on the basis of their total grade equivalent score on a standardized achievement test. All subjects had an IQ of ninety or above. Subgroups of underachievers and achievers received one of the following treatments between trials of a paired-associate task: praise, reproof, or silence.

The results indicated a significant difference in the performance of underachievers according to the type of treatment they received. Praise resulted in a greater number of trials to reach the criterion of learning than reproof for underachievers. This finding supported Van De Riet's hypothesis that underachievers were fearful of success.

Luetgert's (1967) research into the effects of verbal reinforcement upon the learning of underachievers also indicated that praise was less effective than reproof. Luetgert provided verbal reinforcement to the subjects on a percentage basis. Some subgroups recieved praise for eighty per cent of their responses and reproof for the remaining twenty per cent. Other subgroups received reproof for eighty per cent of their responses and praise for the remaining twenty per cent of their responses.

The findings of Van De Riet (1964) and Luetgert (1967), which indicated that reproof was more effective than praise for facilitating learning in underachievers, may have been influenced by the manner in which the underachievers were identified and the type and schedule of reinforcement that they were given.

Van De Riet used achievement test results to identify underachievers. However, achievement test results have not been as effective as teacher ratings in identifying children who are unproductive in the classroom.

The verbal reinforcement in each study was not contingent upon a specific response. This, together with a lack of variety in the verbal reinforcers, may have reduced their effectiveness for influencing a subject's response.

Anderson, White, and Wash (1966) found that reproof was not a more effective reinforcer for facilitating learning than praise when given to female college students. There was a trend for praise to be the most effective reinforcer.

In replicating the research of Anderson, White, and Wash (1966) with underachieving and achieving college students, White (1967) concluded:

> Evidence from Hurlock's (1925) initiating study on praise and reproof, down to the present time, reaffirms an age-old axiom that praise of student behavior will generally improve performance more than methods of reproof (p. 324).

Predictions as to the relative effectiveness of praise and reproof in facilitating learning can be made from Crandall's (1960, 1963) hypotheses regarding the goal of achievement behavior.

> Achievement behavior is any behavior directed toward the attainment of approval or the avoidance of disapproval...Such approval can be verbal,..And similarly, disapproval can take the form of direct verbal criticism (1963, p. 417).

The implication of this hypothesis is that either praise or reproof would be effective reinforcers for facilitating learning. Learning would be positively affected by attaining approval or by avoiding disapproval.

There is evidence that this hypothesis may be appropriate for achievers (Cartwright, 1970), but in determining the effects of negative verbal reinforcement upon learning Stein (1969) cautions:

> ...rather than attempting to determine the overall influence of disapproval,

> future studies should focus on finding those factors which determine whether individual responses to disapproval will be positive or negative (p. 735).

Examiner Variables

Studies dealing with the influence of examiner variables such as sex and vocal intonation upon the effectiveness of verbal reinforcement for facilitating learning and performance have led to equivocal findings.

Schmidt (1941) employed a group of students from various grade levels ranging from grammar school to college in his study of the effectiveness of praise and reproof in facilitating learning. Subjects were given either praise or reproof while working on a code substitution task. While neither praised or reproved subjects were more effective in completing the task than subjects who received no verbal reinforcement, differences did occur between the groups according to which examiner did the testing. Schmidt concluded that in addition to subject variables, the nature of the examiner's role must be taken into consideration in determining the effectiveness of praise and reproof.

Stevenson (1961) found that sex differences in examiners can affect the performance of preschool children when receiving supportive comments while working on a marble-dropping task. There were no significant interactions, however, between the sex of the examiner and the type of verbal reinforcement for college students

learning by the serial anticipation method (Hetherington and Ross, 1963) or for fourth graders performing a coding task (Stein, 1969).

Schulman (1966) and Solomon and Yaeger (1968) have suggested that the vocal intonation with which the examiner presents the verbal reinforcer may have an influence upon the subject's responsiveness to the statement.

Brooks, Brandt, and Weiner (1969) hypothesized that vocal intonation would cause more variation in the learning of children from a low socioeconomic level as compared with children from a middle socioeconomic level when given verbal reinforcement. The results of their research supported this hypothesis. There was no significant difference in the performance of middle socioeconomic level children when receiving verbal reinforcement with and without vocal inflection. Children from low socioeconomic level backgrounds, however, performed significantly better when given verbal reinforcement with vocal inflection as compared with verbal reinforcement without vocal inflection.

Kashinsky and Weiner (1969) replicated the research done by Brooks, Brandt, and Weiner (1969) and supported their results. They found that low socioeconomic level children responded differently to instructions presented in a positive tone, neutral tone, or a negative tone. Middle socioeconomic level children responded equivalently to instructions presented in these various tones.

Task Variables

Differences in the type of task utilized has accounted for some of the variability in the findings of research into the effectiveness of verbal reinforcement in facilitating learning and performance. A variety of tasks have been used: Blankenship (1938) had subjects memorize a series of digits; Hurlock (1925) and Dollins, Angelino, and Mech (1960) had subjects complete arithmetic problems; Kennedy and Willcutt (1965) had subjects perform a visual discrimination task; and Kelly (1966) had subjects perform on a marble dropping apparatus.

Van De Riet (1963) has commented on the inappropriateness of certain tasks with children who are having learning problems:

> ...in determining the differential effects [of verbal reinforcement] on...children who are school learning problems it seems that a task such as paired-associates, concept formation, or serial learning is more appropriate than discrimination tasks or output measures (p. 8).

Reinforcement Variables

The specific form that a verbal reinforcer may take, together with the frequency and contingency with which it is presented, can affect its effectiveness in facilitating learning. Presentation of research highlighting the various forms that verbal reinforcement has taken will precede a presentation of research having relevance to the type of schedule used in giving verbal reinforcement.

Havighurst (1970) categorizes various types of reinforcement according to their relative importance at different stages of human development. During the first four years of life the satisfaction or deprivation of physiological appetites is a primary source of reinforcement. In the age range from five to ten years one of the most important forms that reinforcement can take is praise and reproof, expressions of affection, and esteem from adults. Rewarding and punishing functions from the superego and ego assume importance in subsequent years.

Havighurst (1970) states that external rewards, either tangible or intangible, have positive value for children having academic problems and children raised in disadvantaged environments.

Anderson, White, and Wash (1966) used falsified test scores as a means of praising or reproving a group of college students. An assessment of the relative effects that an extremely low or high sham score, together with comments, would have upon the second administration of an arithmetic test was made. The results revealed that praise tended to be more effective than reproof in facilitating a higher score on the test.

Waterman, Northrup, and Olson (1967) explored the differences in achievement of fifth and sixth graders who received comments of a personal or impersonal nature written on their paper. The impersonal comment was: "This is an excellent paper." The personal comment was: "Your paper is excellent (name of the student).

Keep it up." The results of the study indicated no significant differences in the levels of achievement for any of the groups on science and social studies tests.

Stein (1969) found that fourth grade boys and girls did better when given praise ("good", "fine", "You're working very hard.") than when they were merely informed that their response was "correct" or "right", given reproof, or given no verbal reinforcement while performing a coding task.

Contingency of reinforcement has been considered a major factor in determining the reinforcer's effectiveness in influencing behavior (Kimble, 1961). When reinforcement is not contingent upon a particular response, there is the possibility that a positive verbal reinforcer might follow an incorrect response and a negative verbal reinforcer might follow a correct response.

Anderson (1967) has commented on the implications that contingency of reinforcement can have for research related to education:

> Educators and educational psychologists continue to deal with more global constructs, such as "classroom climate." These constructs miss the whole point, since the effects of praise, attention, and the like depend upon the contingencies at which they appear (p. 146).

Terrell and Kennedy (1957) utilized a schedule of continuous reinforcement with a group of children ranging in age from four to nine. After each correct response on a discrimination task

the subject was told: "That's fine--you are doing well." Incorrect responses were followed by: "No, not that--you are wrong." In ranking the order of effectiveness of these and other types of reinforcement, praise was more effective than reproof in facilitating learning.

Travers, Wagenere, Haygood, and McCormick (1964) also provided a continuous schedule of reinforcement to a group of fourth, fifth, and sixth graders, but on a group rather than an individual basis. Schedules of reinforcement which provided a redundancy of information ("That's right (wrong)." and explanation) led to the highest levels of performance.

Blankenship and Humes (1938) scheduled praise or reproof as an intervening variable between two sets of trials on a task requiring auditory memory. The effects of praise and reproof on the subjects performance was negligible.

Stevenson and Cruse (1961) used a fixed-ratio schedule of reinforcement with a group of normal and feebleminded children. After every fifteenth marble that a student dropped in a hole he was given either praise or reproof. Praise was an effective reinforcer for only the normal children. Reproof eventually led to a termination of behavior in both normals and feebleminded.

Stevenson and Fahel (1961) gave supportive statements to groups of feebleminded and normal children on a fixed-interval schedule (every two minutes). Groups receiving supportive comments failed to show a higher level of performance than groups not re-

ceiving supportive comments.

Catalana and Kirkpatrick (1968) provided subjects with praise after each correct response on a serial learning task. The results revealed that praise could either facilitate or inhibit learning when compared with a condition in which there was no verbal reinforcement. This suggested that praise had a motivating effect upon learning that was not provided by the informational feedback of the apparatus alone.

Summary

From the review of the literature related to underachievement and verbal reinforcement come certain patterns which have relevance for this research.

The term underachiever has been applied to the student whose level of academic achievement is not commensurate with his mental ability. Mental ability is typically assessed by standardized aptitude tests. Level of academic achievement may be assessed by standardized achievement tests or classroom teacher ratings. The use of teacher ratings has been found to be the most effective method for delimiting a group of students who are unproductive in the classroom (see pp. 11-13 in the present study).

Underachievement occurs with greater frequency and chronicity in male as compared with female students. Underachievers generally manifest their first failure in fourth grade.

When underachievement is associated with psychological fac-

tors, the underachieving male is characterized by a poor self-concept, difficulties with self-assertion, a resistance towards authority, and having either a fear of failure or a fear of success.

Praise has been found to be effective in facilitating the learning of fourth grade students. However, differential predictions can be made as to the effectiveness of praise and reproof upon learning in underachievers according to whether one conceptualizes the syhdrome as reflecting a fear of failure or a fear of success. Studies investigating the relationship between underachievement and psychological factors tend to suggest that the underachiever has a fear of failure. Yet when fourth grade males have been categorized according to their level of achievement, underachievers responded more favorably to reproof than to praise. This finding, however, may have been related to the manner in which the underachievers were identified (achievement test rather than teacher ratings) and the type and schedule of verbal reinforcement that was provided.

The influence of the sex of the examiner in determining the effectiveness of the verbal reinforcer tends to be negligible with subjects at a fourth grade level. The intonation with which the examiner presents the verbal reinforcer has greater significance for low socioeconomic subjects than for middle socioeconomic level subjects.

Verbal reinforcement has been given to subjects orally and/or

in written form while performing a variety of tasks. The review of literature suggests that verbal reinforcement can have its greatest effectiveness for students at a fourth grade level when it is presented orally. A meaningful task and a schedule of reinforcement which incorporate a contingency factor also tend to increase the effectiveness of a verbal reinforcer.

Chapter III will explain the way in which these findings have been incorporated into the experimental design and materials utilized in this study.

CHAPTER III

METHOD

It will be recalled that the purpose of this study was to determine the relative effectiveness of praise and/or reproof on a serial learning task in a group of underachievers. The hypotheses of this study stemmed from the results of those studies presented in the review of the literature which have suggested that underachievers have a fear of failure and a need for success. As stated in Chapter I, these hypotheses are: (1) Underachievers who receive praise will require fewer trials to master a list of sight vocabulary words than underachievers who receive either reproof, or praise-reproof, or silence; (2) Underachievers who receive reproof will require more trials to master a list of sight vocabulary words than achievers who receive reproof; and (3) Underachievers who receive praise will not require more trials to master a list of sight vocabulary words than achievers who receive praise.

In order to test these hypotheses, this chapter will delineate the method of selecting subjects, the apparatus and materials used in collecting the data, and the procedure followed in examining the subjects.

Subjects

As highlighted in the review of the literature, the follow-

ing factors were taken into consideration in selecting subjects for this study: (1) the underachievement syndrome occurs more frequently in males than in females; (2) underachievement is manifested during the first four years of elementary school (underachievers generally experience their first failure in fourth grade); and (3) middle-class students are unaffected by the intonation with which a verbal reinforcer is presented and are generally not exposed to environmental deprivation and negative attitudes toward education at home (sociological factors). Thus, the population delimited for this study was middle-class males currently enrolled in the fourth grade.

Two school districts located in suburban communities southwest of Chicago, Illinois were selected to participate in the research. These districts were selected because they each serve communities which are primarily composed of white, middle-class families, they provide a similar educational program from kindergarten through eighth grade, they have a student enrollment within the range of 4,000 to 5,000, they use the same intelligence test to assess mental ability of fourth graders (given the second month of the school year in each school district), and they are relatively contiguous to one another.

To ensure that the students employed in the study had at least an average level of intelligence, fourth grade male students having an IQ within the range of 100 to 116 on the Otis-Lennon Mental Ability Test, Form J (Otis and Lennon, 1969) were identi-

fied. A total of 239 students met this criterion and constituted the population for the study.

As teacher ratings have been found to be the most effective method for identifying underachievers, all students within the identified population were rated by their classroom teacher on their level of academic achievement. Each student was rated in five major subjects: Reading, Arithmetic, Language Arts, Science, and Social Studies. The teacher rated the student's level of academic achievement in each of these areas on the following scale: Well Below Grade Level (1); Below Grade Level (2); At Grade Level (3); Above Grade Level (4); and Well Above Grade Level (5) (Appendix A).

A rating point average (RPA) was obtained for each student by dividing the total sum of his ratings by five. The mean RPA for the population of fourth grade males having an IQ within the range of 100 to 116 was 2.875. The RPA's for each of the school districts contributing to this population were 2.883 and 2.867.

In order to obtain two groups having a divergent level of achievement, students having an RPA of 2.6 and below were classified as underachievers and students having an RPA of 3.2 and above were classifed as achievers. Students having an RPA of 2.8 or 3.0 were not included within the underachiever or achiever groups.

A total of 168 subjects in the population met the RPA criterion for inclusion into either the underachiever or achiever groups. From this pool of subjects (ninety-two underachievers and

seventy-six achievers) a group of sixty-five underachievers and a group of sixty-five achievers were matched for mental ability.

The matched sample of underachievers had a mean IQ of 108.18 and a standard deviation of 3.458. Their mean RPA was 2.283, with a standard deviation of .2973. The matched sample of achievers had a mean IQ of 108.69 and a standard deviation of 4.245. Their mean RPA was 3.692, with a standard deviation of .4212 (see Table 1). A significant difference was obtained between RPA's ($t = 21.878$, $df = 64$, $p < .01$) but not between IQ scores ($t = .7441$, $df = 64$, $p > .05$) (Appendix B). This indicated that although the two groups were equivalent in their level of intelligence, the achievers had a significantly higher level of achievement than the underachievers.

The average age of the underachievers was nine years-six months and the average age of the achievers was nine years-seven months.

The matched group of underachievers were randomly assigned to one of four treatments: praise, reproof, praise-reproof, and silence. Fifteen subjects were assigned to each treatment group. A similar procedure was followed with the matched group of achievers. There were a total of eight groups with 120 subjects employed in the study: Underachiever Praise (UAP); Underachiever Reproof (UAR); Underachiever Praise-Reproof (UAP-R); Underachiever Silence (UAS); Achiever Praise (AP); Achiever Reproof (AR); Achiever Praise-Reproof (AP-R); and Achiever Silence (AS) (see schematic repre-

TABLE 1

MATCHED SAMPLES OF UNDERACHIEVERS AND ACHIEVERS: INTELLIGENCE QUOTIENTS AND RATING POINT AVERAGES

	IQ		RPA	
	Mean	SD	Mean	SD
Underachiever	108.18	3.458	2.283	.2973
Achiever	108.69	4.245	3.692	.4212

sentation on p. 46). The remaining ten subjects in the matched sample (five underachievers and five achievers) were used to replace any of the subjects who were eliminated by one of the screening techniques.

The screening techniques used were a Bender Visual-Motor Gestalt Test (Bender, 1938), a review of the student's health history, and the student's ability to read the words on the test list (this will be explained in the procedure section).

Using norms developed by Koppitz (1964) for children between the ages of nine years-six months and nine years-eleven months a score of five or more errors on the Bender Visual-Motor Gestalt Test was interpreted as being indicative of visual perceptual-motor difficulties. Visual perceptual-motor difficulties have been associated with organic dysfunction and often leads to poor academic achievement (Johnson and Myklebust, 1967). Four subjects failed this screening technique.

The health history of each student was reviewed in order to determine whether there had been any history of neurological complications. This resulted in one of the subjects being excluded from the study.

Two students transfered to different school districts and three subjects failed to read the words on the list (see p. 43). These and the other subjects eliminated from the study were replaced by the remaining students in the matched sample, and, when necessary, by students in the pool of subjects identified by the

RPA criterion (group from which the matched sample was initially derived). Seven of the students replaced were underachievers and three were achievers. All replacements were done randomly.

Apparatus and Materials

A memory drum manufactured by the Lafayette Instrument Co. (Model No. 303) was used to present the stimuli. Use of the memory drum to present the stimuli was conducive toward providing verbal reinforcement on a predetermined schedule and contingent upon a particular response. It also permitted the use of stimuli which has some relevance to academic material.

The stimuli were eight four-letter words selected from Dolch's (1951) list of sight vocabulary words (Appendix C). Complete mastery of all sight vocabulary words is generally attained by the average third grader. The words for the test list were selected and listed in an order which minimized associations between words. A pilot study done with fourth grade males having an IQ within the range specified for this study indicated that a list of eight words would be sufficient for assessing differences among subjects in attaining mastery.

Verbal reinforcers used in this research were selected from the following list of statements:

Praise (Positive Verbal Reinforcement)

1. You're really good at this.
2. That's very good.

3. You're doing very well.

4. That's fine.

Reproof (Negative Verbal Reinforcement)

1. That isn't too good.

2. Uh uh.

3. You're not too good at this.

4. You're doing very poorly.

To ensure that each of these verbal statements were properly categorized as either a positive or negative reinforcer, they were rated by eleven judges. The judges were selected from a population of fourth grade males having an IQ within the range of 100 to 116. Each statement was read to the judges, in groups of three or four, by the examiner. Each judge independently rated the statements according to the message they conveyed. If a judge considered the statement to convey a message of approval, he was instructed to rate it as positive. Statements which conveyed a message of disapproval were to be rated as negative (Appendix A).

Although there is evidence that vocal intonation is not a significant variable in determining the effectiveness of a verbal reinforcer for middle-class subjects (the type used in this study), each statement was presented orally to the judges by the examiner. In this manner both the vocal intonation with which the reinforcement was given and the content of the statement were taken into consideration when a rating (positive or negative) was made.

A Chi Square analysis of the judges ratings indicated that

the verbal statements were properly categorized (see pp. 40-41), as positive verbal reinforcement ($\chi^2 = 38.0$, df = 3, p .001) and as negative verbal reinforcement ($\chi^2 = 29.4$, df = 3, p..001) (Appendix B).

Procedure

All testing was done during regular school hours at the school in which the subject was attending. Each school provided a private room with a table, two chairs, and an electrical outlet for the memory drum. Schools were scheduled for testing according to when private space was available. The time required for each subject to complete the task under the specified procedure was approximately twenty to thirty minutes. All subjects were tested during the latter part of January and the begining of February, 1970. A total of four weeks were required to collect all the data.

To minimize the effects of any examiner expectations, the examiner was unaware of the achievement status of each subject. In administering the treatments the examiner did not know if the subject was an underachiever or an achiever. All testing was done by the same examiner; a male.

The examiner accompanied each subject from his classroom to the examining room. Upon meeting the subject the examiner introduced himself, told him that he and the examiner would be spending some time together, and that he would be given additional in-

formation upon reaching another room in the building. This information was conveyed in a matter-of-fact manner.

A Bender Visual-Motor Gestalt Test was initially administered to the subject. After successfully completing this test the subject was required to learn the list of eight sight vocabulary words by the anticipation method. The eight words were presented in serial order by the memory drum. The subject was given the following instructions:

> Some words will appear in this window (pointing to the memory drum), one at a time. I want you to read each word aloud as it comes into view.

The initial trial, in which all eight words were presented on the memory drum, served the purpose of insuring proper recognition of all the words. If the subject was unable to read a word on the list he was excluded from the research (three subjects failed to meet this criterion).

After the subject had identified each word correctly, he was told:

> I want to see how good your memory is for the words you have just read. When a word appears in this window you are to tell me the next word that will come into view. You are to remember the word that will appear after the word you see in the window. Each time you see a new word in the window, tell me what the next word on the list will be. Understand? (If not, the directions were repeated until the subject comprehended the task.) Let's see how quickly you can

get them all right.

Upon presentation of a star, which preceded the first word on the list, subjects were asked to anticipate ("Next word.") the word coming into view. If the subject failed to respond on three successive stimulus words, he was asked to anticipate the next word on the list. Although a subject's failure to respond counted as an error, a lack of response was not tabulated for reinforcement purposes in the reproof and praise-reproof groups (this will be claified later in this section when the schedule and contingency of reinforcement are specified).

A trial consisted of a complete presentation of the eight words on the list. During the recogniation trial each word was exposed for a period of four seconds. For the testing trials each word was given a two second exposure with a two second interval (blank) between words. A twelve second interval was given between trials. Mastery of the sight vocabulary words occurred when the subject correctly anticipated all eight vocabulary words in a single trial. Testing commenced with the trial following the recognition trial. If the subject could not master the list of words within twenty-five trials the task was terminated.

The effectiveness of a verbal reinforcer is enhanced when it is contingent upon a specific response and is presented orally rather than in written form. Therefore, in this study, the reinforcement variable (praise, reproof, praise-reproof) was given

orally, was contingent upon a specific response, correct or incorrect, and was presented on a variable-ratio schedule (Ferster and Skinner, 1957). The variable-ratio schedule was determined from a table of random numbers. Although a subject could receive a verbal reinforcer after one or more contingent responses (right or wrong, depending upon the treatment group), the entire schedule averaged five contingent responses for each reinforcement.

Subjects in the praise groups received positive verbal reinforcement only after a correct response was given and subjects in the reproof groups received negative verbal reinforcement only after an incorrect response. Reinforcement was also contingent for the subjects receiving praise-reproof. The schedule of reinforcement determined for the praise groups and the reproof groups was utilized for the praise-reproof groups (Appendix A). However, the type of reinforcement was alternated; first praise, then reproof, and so forth throughout the task. The praise-reproof groups thus received a combination of positive and negative verbal reinforcement on a variable-ratio schedule with a positive reinforcer being contingent upon a correct response and a negative reinforcer being contingent upon a incorrect response. The subjects in the silence groups received no verbal reinforcement.

All subjects received reinforcement in the form of informational feedback from the apparatus. After a subject anticipated the next word on the list it would come into his view. The subject knew, therefore, whether his anticipation was correct or

incorrect.

The following is a schematic representation of the treatment groups:

	Praise	Reproof	Praise-Reproof	Silence
Underachiever	UAP	UAR	UAP-R	UAS
Achiever	AP	AR	AP-R	AS

After mastery of the sight vocabulary words had been attained, all subjects receiving reproof were told:

> Very good. You had some difficulty in the begining but you did very well at the end.

Summary

The purpose of this study is to determine the relative effectiveness of praise and/or reproof on a serial learning task in a group of underachievers. In order to do this, 120 male students in the fourth grade were presented with a list of eight sight vocabulary words by a memory drum and were required to learn the list by the anticipation method. The words were presented in serial order. Subjects received one of four treatments while learning the list of words: praise, reproof, praise-reproof, or silence. All verbal reinforcement was presented on a variable-ratio schedule and was contingent upon a specific response.

The results of this procedure will be presented in Chapter IV.

CHAPTER IV

RESULTS

The present study was designed to test the contention that praise would be a more effective reinforcer than reproof for facilitating learning in underachievers. Specific hypotheses related to this contention have been stated in Chapters I and III. A 2 X 4 factorial design was used to test these hypotheses. Achievement (underachiever and achiever) constituted the row factor and reinforcement (praise, reproof, praise-reproof, and silence) constituted the column factor. The number of trials that a subject required to master the list of words was used as the criterion measure. Subjects with low scores mastered the list faster than subjects with high scores.

The mean number of trials to master the list of words and their respective standard deviations (SD) for the underachievers and achievers are presented in Table 2 and the results of the factorial analysis are presented in Table 3. Homogeneity of variance was indicated by Hartley's (Walker and Lev, 1953; p. 192) method of analysis ($F_{max} = 2.426$, $df = 15$, $p > .05$).

Both the achievement and reinforcement effects reached the .05 level of significance. However, the interaction between achievement and reinforcement only reached the .10 level of significance. This latter finding appears to be related to the limited number of cells in which the interactive effects occurred.

TABLE 2

MEAN NUMBER OF TRIALS REQUIRED TO MASTER SIGHT VOCABULARY WORDS

	Praise		Reproof		Praise-Reproof		Silence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
UA	11.53	4.647	15.07	4.637	13.53	5.148	14.86	4.219
A	11.60	4.615	9.87	2.988	9.93	3.414	15.06	5.550

TABLE 3

ANALYSIS OF VARIANCE: NUMBER OF TRIALS REQUIRED TO MASTER SIGHT VOCABULARY WORDS AS RELATED TO ACHIEVEMENT AND REINFORCEMENT

Source	df	SS	MS	F
Achievement (A)	1	136.53	136.53	6.520*
Reinforcement (B)	3	222.30	74.10	3.538*
A X B	3	163.80	54.60	2.607+
Within	112	2345.33	20.94	
Total	119	2867.96		

*p .05

+p .10

Specifically, the interactive effects are predominantly evident in the UAP and AS groups (see Figure 1).

UAP (11.53) mastered the list of words at a faster rate than UAR (15.07) and UAS (14.86). Their performance was, in fact, similar to AP (11.60). The remaining underachiever groups (UAR, UAP-R (13.53), and UAS) were relatively consistent with one another in their rate of learning.

AS (15.06) required a greater number of trials to master the list of words than AP, AR (9.87), and AP-R (9.93). The rate of learning displayed by AS was similar to that of UAS. AP, AR, and AP-R mastered the list within an equivalent number of trials.

Lindquist's (1953, p. 93) method of assessing differences between cells was used to test the hypotheses of this research. The results of this analysis are presented in Table 4.

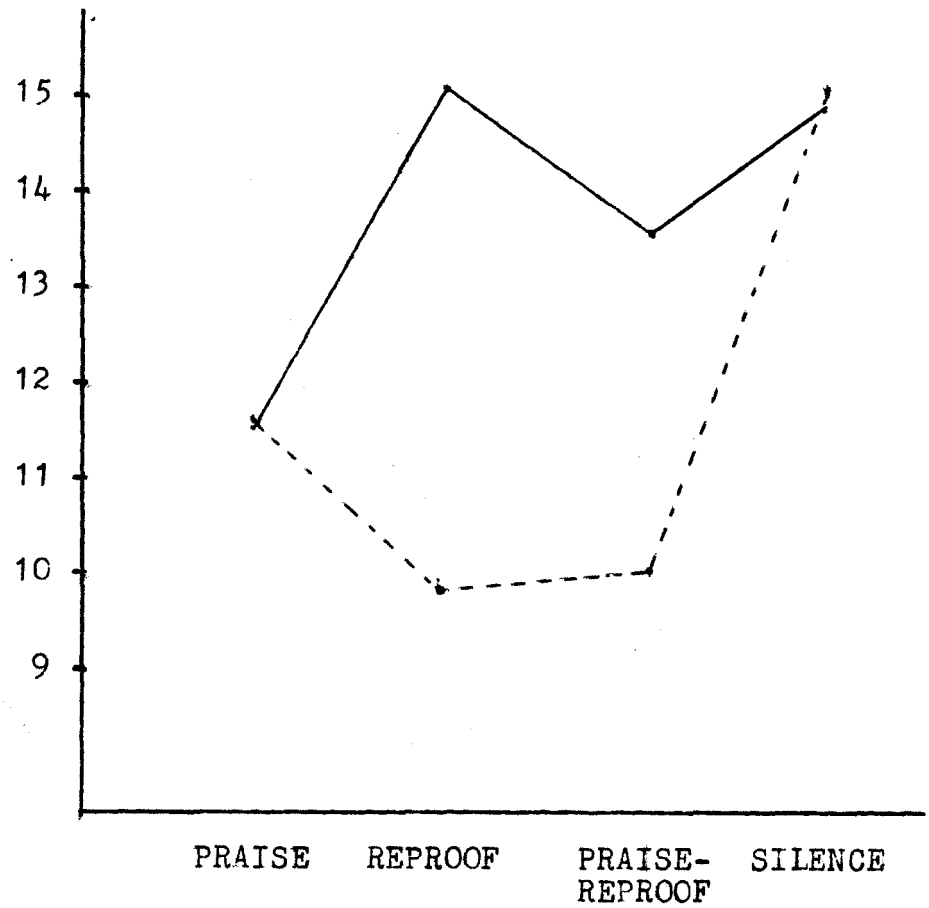
The first hypothesis predicted that UAP would require fewer trials to master the list of words than UAR, UAP-R, and UAS. A significant difference ($p < .05$) was obtained between UAP and UAR and between UAP and UAS. There was no significant difference between UAP and UAP-R.

The second hypothesis predicted that UAR would require more trials to master the list than AR. The difference between UAR and AR reached the .01 level of significance.

The third hypothesis predicted that there would be no difference between UAP and AP in the number of trials required to master the list of words. The results indicated that there was no signi-

FIGURE 1

MEAN NUMBER OF TRIALS REQUIRED TO MASTER SIGHT VOCABULARY WORDS



____ : Underachievers

---- : Achievers

TABLE 4

COMPARISON OF CELL DIFFERENCES: NUMBER OF TRIALS REQUIRED TO MASTER SIGHT VOCABULARY WORDS

	UAR	UAP-R	UAS	AP	AR	AP-R	AS
UAP	3.54*	2.00	3.33*	.07	-	-	-
UAR	-	2.54	.21	-	5.20'	-	-
UAP-R	-	-	1.33	-	-	-	-
AP	-	-	-	-	1.73	1.67	3.46*
AR	-	-	-	-	-	.06	5.19'
AP-R	-	-	-	-	-	-	5.13'

*$p < .05$

'$p < .01$

ficant difference ($p > .05$) between UAP and AP in their rate of mastery.

There were no significant differences between the various achiever reinforcement groups (AP, AR, AP-R). However, both AR and AP-R differed from AS at the .01 level of significance and AP differed from AS at the .05 level of significance.

Conclusions derived from these results will be discussed in Chapter V. That discussion will focus on the implications that these results have for educating underachievers and achievers, the relationship between psychological factors and underachievement, curriculum development, and the need for additional research.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this study was to determine the effects of praise and/or reproof on serial learning in underachievers. It was hypothesized that underachievers would display more effective learning under conditions of praise than under conditions of reproof. This hypothesis was based upon the assumption that underachievers have a fear of failure and a need for success.

Using a standardized aptitude test and classroom teacher ratings, a group of underachieving and a group of achieving fourth grade males from a middle-class population were identified. Selected samples from this group were required to learn a list of eight sight vocabulary words, presented in serial order, by the anticipation method. Subjects were given one of four treatments while learning the list of words: praise, reproof, praise-reproof, or silence. Verbal reinforcement was contingent upon a specific response, right or wrong, and presented on a variable-ratio schedule.

The results of the study were in the predicted direction. Underachievers learned at a faster rate under conditions in which they received praise as compared with conditions in which they received reproof. In comparing the various underachiever treatment groups (UAP, UAR, UAP-R, and UAS), only the praised group (UAP) performed significantly better than the silence group (UAS).

When given praise (UAP), underachievers further demonstrated a capacity for learning at a rate commensurate with praised achievers (AP). However, when underachievers were given reproof (UAR), they were unable to keep pace with reproved achievers (AR).

The finding that praise (UAP) is more effective than reproof (UAR) for facilitating learning is in contradiction with previous studies which have also given verbal reinforcement to underachieving male elementary students (Luetgert, 1967; Van De Riet, 1964). These studies found that reproof was more effective than praise in facilitating learning in underachievers. This contradiction may be associated with two factors inherent in each study: the method of selecting underachievers and the type and schedule of verbal reinforcement provided in the experimental design.

The underachievement syndrome is identified more readily by teacher ratings of academic achievement than by achievement test results. Teacher ratings tend to measure a student's daily performance, or output, whereas, achievement tests tend to measure the quantity or quality of learning that has taken place. Teacher ratings are more effective than achievement test results because the underachievement syndrome is manifested, to a greater extent, in daily performance than in the quantity or quality of learning that has been achieved (achievement test results) (see pp. 11-13 in the present study).

Differences in the effects of various types of verbal rein-

forcement may be expected with groups of underachievers that have been selected by different measures of academic achievement. The present study used teacher ratings to identify underachievers. Van De Riet (1964) relied upon achievement test results to identify underachievers. This suggests that there may have been differences in the respective samples that were categorized as underachievers.

Both the type and schedule of verbal reinforcement given to underachievers can have a direct influence on its effectiveness in facilitating learning. In Van De Riet's (1964) research the verbal reinforcement took the form of a statement, which connoted either praise or reproof. This statement was presented only once--between the administration of two tasks. Luetgert (1967) used the terms "good" or "no" as verbal reinforcers. These terms were presented in such a manner that they were response-irrelevant. That is, a correct response may have been followed by "no" and an incorrect response may have been followed by "good".

The fact that verbal reinforcement was not contingent upon a specific response, and it took the form of either a single presentation of a statement or a repetition of only two words, suggests that the potency of the verbal reinforcement may have been diminished in these studies.

All reinforcement in the present study was contingent upon a specific response, either right or wrong, and consisted of a number of different statements. The contingency and variety of

verbal reinforcement in the present study, together with a predetermined schedule (variable-ratio) with which they were presented, may have enhanced their potency for influencing a subject's response. It is suggested that positive and negative verbal reinforcement can influence a subject's responsiveness to a greater extent under these conditions than when contingency, variety, and scheduling of verbal reinforcement are not systematically controlled.

The finding that praise is more effective than reproof in facilitating learning for underachievers suggests that Crandall's (1963) hypothesis regarding the goal of achievement behavior is not applicable to underachievers. Crandall hypothesized that achievement behavior is "...any behavior directed toward the attainment of approval or the avoidance of disapproval...(1963, p. 417)." In this study the attainment of approval (praise) did result in a faster rate of learning for underachievers. However, avoidance of disapproval (reproof) resulted in a decrement in learning.

Crandall's hypothesis regarding the goal of achievement behavior appears to have greater relevance for achievers than for underachievers. Achievers who received any type of verbal reinforcement (AP, AR, and AP-R) learned at a faster rate than achievers who received no verbal reinforcement (AS). There were no significant differences between achievers who received praise, reproof, or praise-reproof. Yet there was a trend for reproof, pre-

sented either singly or in combination with praise, to be the most effective reinforcer for learning in achievers.

The results of this study have relevance to the theoretical formulations that relate certain personality characteristics to the underachievement syndrome. Praise appears to be an effective verbal reinforcer for underachievers because it fulfills their need for success and diminishes their fear of failure. Under conditions in which the underachiever is continually experiencing success in the form of praise, he can be highly productive.

The inhibiting effect that reproof had upon the learning of underachievers further supports those studies which describe the underachiever as having a poor self-concept. Reproof conveys a message of failure, inadequacy, and disapproval. This message may have reinforced the underachiever's poor self-concept; which, in turn, tended to perpetuate his inclination for performing inadequately.

Achievers are apparently able to tolerate the negative connotations of reproof. In fact, they responded to it with an increase in their performance. This phenomenon may have been associated with their positive self-concept. Achievers have been found to feel competent and worthy. These feelings may have enabled them to muster their resources under conditions of adversity and master the task presented to them quite effectively.

When underachievers received a combination of praise and reproof they did not perform significantly better than reproved un-

derachievers nor worse than praised underachievers. This finding seems to reflect the effects of combining the beneficial effects of praise with the detrimental effects of reproof. It would be inappropriate to conclude that this combination of praise and reproof resulted in one reinforcer diluting the effects of the other reinforcer. Yet underachievers receiving a combination of reinforcers did not perform significantly better nor worse than underachievers who were not verbally reinforced.

The results of this study can be discussed in operational as well as theoretical terms. Given the methodology used to define underachievers in this study, one need not speculate as to the origins or dynamics of underachievement--the results merely indicate that praise is more effective than reproof in facilitating learning by the serial anticipation method. Thus, without delving into the 'inner workings' of the underachiever, one might conclude that situations in which behavior is praised rather than reproved will result in better learning. This Skinnerian interpretation would place sole emphasis on the stimulus and the response. The intervening variable, the underachiever, is of little consequence.

Whether one views the results of this study in theoretical or operational terms, they do have a direct implication upon the education of underachievers and achievers. Due to the nature of the task utilized in the study, however, this implication has greater relevance to situations in which one works with them individually rather than in groups.

If learning is to be facilitated in underachievers, praise rather than reproof should be provided. In the case of achievers, praise, reproof, or a combination of the two are all effective verbal reinforcers for promoting learning. For both underachievers and achievers the verbal reinforcement should be contingent upon a specific response and scheduled in such a manner that it retains its potency.

Previous studies have suggested that the sex of the person presenting the verbal reinforcers, and the intonation with which they are presented, will not be significant variables when dealing with fourth grade, middle-class males. They may have a greater influence with subjects who differ in these characteristics.

The results of this study have implications for curriculum planning and development. The apparatus which presented the sight vocabulary words provided all subjects with reinforcement in the form of informational feedback. After anticipating the unseen word on the list, the word came into the subject's view. The subject was thus informed by the apparatus as to whether his response was correct or incorrect. Consequently, the silence groups were receiving reinforcement in the form of informational feedback; whereas, the praise, reproof, and praise-reproof groups received reinforcement in the form of informational feedback plus verbal reinforcement from the examiner.

Achievers who received only informational feedback (AS) did not do as well as achievers who received informational feedback in

combination with verbal reinforcement (AP, AR, and AP-R). In the case of underachievers, only the group that was praised (UAP) did significantly better than the silence group (UAS). This would suggest that in planning a learning experience for achievers and underachievers, particularly when programmed instruction is considered, arrangements should be made for interpersonal interaction with an adult who can provide verbal reinforcment, of a type previously specified, in addition to the informational feedback provided by the materials.

By way of further implication, reinforcement in the form of informational feedback is one of the primary features of programmed instruction. In other words, while working with programmed materials the student is continually informed about the correctness of his response.

As implied in this discussion, the results of this study, and their relevance for interpersonal interactions and curriculum planning with underachievers and achievers, must be interpreted within the framework of the variables inherent in the experimental design. These variables would include the method of defining underachievement, subject characteristics (sex, IQ, age, socioeconomic status, and grade level), type and schedule of reinforcement, and the nature of the task.

A summary of the conclusions and recommendations of this study are:

1. Learning in underachievers can be facilitated under conditions in which they receive praise as compared with conditions in which they receive either reproof or no verbal reinforcement (silence).

2. Praise appears to be more effective than reproof in facilitating learning in underachievers because it fulfills their need for success and diminishes their fear of failure.

3. Learning in achievers can be facilitated under conditions in which they receive either praise or reproof or a combination of the two as compared with conditions in which they receive no verbal reinforcement.

4. When reinforcement is provided only in the form of informational feedback (by the materials), it is not as effective as informational feedback combined with verbal reinforcement (of a type specified in items 1 and 3) for facilitating learning in underachievers and achievers.

5. It is suggested that when verbal reinforcement is given to underachievers and achievers that it be contingent upon a specific response, correct or incorrect, have sufficient variety, and be scheduled at a predetermined rate. These factors would tend to enhance the potency of the verbal reinforcement for influencing a student's responsiveness.

Further research into the effectiveness of various types of verbal reinforcement upon the learning of underachievers appears to be warranted. Specific suggestions include:

1. To determine the effects of verbal reinforcement upon the learning of underachievers in a group situation;

2. To measure the long term effects of verbal reinforcement upon the learning of underachievers;

3. To assess the influence that differences in personality among examiners have upon the effects of verbal reinforcement and the learning of underachievers; and

4. To use underachieving peers or achievers to provide underachievers with verbal reinforcement.

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APPENDIX A

FORMS

Contents

Name of Student _____ School _____ Grade _____

Birthdate _____ Age _____ Teacher _____

Based upon the above listed student's day-to-day classroom performance, please check the one grade level in each of the subjects listed below that best approximates his level of achievement. Do not use past or current achievement test results in making these ratings. Please rate the student's level of achievement according to your assessment of his classroom work on the following point scale:

	Well Below Grade Level 1	Below Grade Level 2	At Grade Level 3	Above Grade Level 4	Well Above Grade Leve 5
Social Studies	_____	_____	_____	_____	_____
Science	_____	_____	_____	_____	_____
Language Arts	_____	_____	_____	_____	_____
Arithmetic	_____	_____	_____	_____	_____
Reading	_____	_____	_____	_____	_____

Do not fill in

r = _____

M = _____

ID NUMBER _____
GROUP _____
DATE _____
TIME _____

NAME: _____ BIRTHDATE: _____ AGE: _____

DISTRICT: _____ SCHOOL: _____ TEACHER: _____

SCHD	TRIAL								TR	TW	TN	TRf
2x-	1.											
3x-	2.											
4x-	3.											
7x-	4.											
5x-	5.											
3x-	6.											
2x-	7.											
1x-	8.											
6x-	9.											
1x-	10.											
4x-	11.											
9x-	12.											
1x-	13.											
8x-	14.											
3x-	15.											
10x-	16.											
1x-	17.											
3x-	18.											
5x-	19.											
1x	20.											
7x	21.											
4x	22.											
	23.											
	24.											
	25.											

TRIALS TO CRITERION: [ ]

BENDER: _____

OTHER: _____

Directions: Standardization of Verbal Reinforcers

I will read a number of statements. Listen carefully to each statement because I want you to rate each one according to whether it conveys a message of approval or disapproval. If you feel that the statement gives approval place a check-mark in the column labeled "positive." If you feel that the statement gives disapproval place a check-mark in the column labeled "negative." Make only one check-mark for each statement.

(The following verbal statements were read to the judges:)

1. You're really good at this.
2. That's very good.
3. You're doing very poorly.
4. That isn't too good.
5. Uh uh.
6. You're not too good at this.
7. You're doing very well.
8. That's very good.
9. That's fine.
10. You're doing very poorly.
11. You're really good at this.
12. You're not too good at this.
13. You're doing very well.
14. That's fine.
15. That isn't too good.
16. Uh uh.

Name: _____ Date: _____

Age: _____ Grade: _____ School: _____

	Positive (+)	Negative (-)
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
0.	_____	_____
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____

APPENDIX B

STATISTICAL DATA

Contents

Underachiever - Achiever Mean RPA Scores: "t" Test

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\Sigma x^2_1 + \Sigma x^2_2}{N(N-1)}}}$$

$$= \frac{3.692 - 2.283}{\sqrt{\frac{11.5220 + 5.7456}{65(64)}}}$$

$$= \frac{1.409}{\sqrt{\frac{17.2676}{4160}}}$$

$$= \frac{1.409}{\sqrt{.00415}}$$

$$= \frac{1.409}{.0644}$$

$$= 21.878$$

$$p < .01$$

Underachiever - Achiever Mean IQ Scores: "t" Test

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\Sigma x^2_1 + \Sigma x^2_2}{N(N-1)}}}$$

$$= \frac{108.69 - 108.18}{\sqrt{\frac{1177.45 + 777.63}{65(64)}}}$$

$$= \frac{.51}{\sqrt{\frac{1955.08}{4160}}}$$

$$= \frac{.51}{\sqrt{.4699}}$$

$$= \frac{.51}{.6854}$$

$$= .7441$$

$$p > .05$$

Verbal Reinforcers: Ratings
Chi Square

Positive Verbal Reinforcers:

	Fo	Fe	Fo-Fe	$Fo-Fe^2$	$Fo-Fe^2/Fe$
1.	20	11	9	81	7.4
2.	22	11	11	121	11.0
3.	21	10.5	10.5	110.25	10.5
4.	21	11	10	100	9.1

$\chi = 38.0$

df = 3

$p < .001$

Negative Verbal Reinforcers:

	Fo	Fe	Fo-Fe	$Fo-Fe^2$	$Fo-Fe^2/Fe$
1.	19	11	8	64	5.8
2.	20	11	9	81	7.3
3.	19	11	8	64	5.8
4.	21	10.5	10.5	110.25	10.5

$\chi = 29.4$

df = 3

$p < .001$

APPENDIX C

TEST LIST: WORDS PRESENTED BY MEMORY DRUM

Contents

Test List: Words Presented by Memory Drum

*

HAVE

SING

TELL

MAKE

FIND

DRAW

KEEP

GROW

*

APPROVAL SHEET

The dissertation submitted by Richard B. Harris has been read and approved by members of the Department of Foundations, School of Education.

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

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

1/14/71
Date

Samuel T Mayo
Signature of Advisor