The effects on children's (K-6) test anxiety, attention span, oral reading rate and school grades of a short term, individual technique in self correction psychotherapy utilizing parents as monitors.

Robert D. Kirk
University of Massachusetts Amherst

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THE EFFECTS ON CHILDREN'S (K-6) TEST ANXIETY, ATTENTION SPAN, ORAL READING RATE AND SCHOOL GRADES OF A SHORT TERM, INDIVIDUAL TECHNIQUE IN SELF CORRECTION PSYCHO- THERAPY UTILIZING PARENTS AS MONITORS

A Dissertation Presented

By

ROBERT D. KIRK

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION

Education

February 1981
THE EFFECTS ON CHILDREN'S (K-6) TEST ANXIETY, ATTENTION SPAN, ORAL READING RATE AND SCHOOL GRADES OF A SHORT TERM, INDIVIDUAL TECHNIQUE IN SELF CORRECTION PSYCHOTHERAPY UTILIZING PARENTS AS MONITORS

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By
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DEDICATED TO

My Wife, Grace
and Sons Bob, John and Neil
in appreciation for their patience
and many sacrifices.
ACKNOWLEDGEMENTS

My sincere thanks and appreciation for the time, effort and support of my committee members for their contribution to my growth and development: Dr. Ronald Fredrickson, Chairperson, Dr. Ena Nuttall and Dr. Frank Rife.

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ABSTRACT

The Effects on Children's (K-6) Test Anxiety, Attention Span, Oral Reading Rate and School Grades of a Short Term, Individual Technique in Self Correction Psychotherapy Utilizing Parents as Monitors

February 1981

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Directed by: Dr. Ronald H. Fredrickson

Low achievement among elementary students is related to a variety of academic and personal-social difficulties. Many of these students seem to have the ability, yet have difficulty converting their ability into achievement. Frequently their difficulties appeared to be related to motivational factors, especially the students' willingness to follow directions, cope with mistakes, and use self correcting behavior. Two psychological factors involved with low school achievement are high test anxiety and low attention span. Research is needed to evaluate techniques that would actively involve the individual and parents in a structured process focused on reducing test anxiety, improving attention span, oral reading rate, and school achievement.

The purpose of this study was to determine whether elementary children Grades K-6 with moderate learning difficulties who received 12 weeks of training in a structured technique in Self Correction Psychotherapy (including parent monitoring) would exhibit differences in test anxiety (Test Anxiety Scale for Children, TASC, Sarason, et al, 1960), attention span, oral reading rate and school grades. Pre and
post assessments were taken and comparisons were made with similar children who had not received this treatment.

The Self Correction technique which involved parents as monitors provided the following specific procedures: Therapists met with both parents and child in their homes at night on a weekly basis. For the rest of the week the student was required to read orally for one half hour for each of the 7 days of the week, and to be monitored by his/her parents on a reading task prescribed by the therapist.

The student was provided with a basal reader at the level at which he or she could read 100 words per minute. A margin for mistakes of 7 mistakes per page was assigned by the therapist. On each page the student was allowed to make 7 mistakes such as mispronunciations, substitutions, omissions and insertions. If the student made more than 7 mistakes on a page, he/she had to reread the page until 7 mistakes or less were counted on a page. One of the parents of the student counted and recorded the number of mistakes per page for the one half hour daily sessions. Parents alternated their monitoring of the student's oral reading rate.

Means were calculated using the pre and post assessment data. Analyses of variance were conducted and due to the significant interaction between the control and experimental groups and the pre and post testing variability, t-tests were performed to identify particular mean differences and their statistical significance. (Correlated t-tests for the experimental group as well as for the control group were done and an additional independent t-test of pre-post differences was done to evaluate the significance of the difference between the xii
mean changes of the experimental and the control students.) Two-tailed tests at the .01 level of confidence were used to measure the students' changes in attention span, reading rate, school grades and test anxiety.

The results of this study indicated significant differences \( (<.01) \) in the improvement in attention span and oral reading rate, and in the reduction of test anxiety between the experimental group of students who received the SCP structured technique and the control group who received no treatment. No significant differences were noted in grades for students in either the experimental or control group in this study. Therefore, 3 of the 4 hypotheses were supported.

Although the parents reported that at home the child was able to follow directions better, is less anxious about making mistakes, is more cooperative and is more self correcting, it may take more than 12 weeks time for these improvements in performance in transfer to the school environment and to school grades in particular due to a period of dormancy for 6 weeks which is described by Weiss (1951) as the "sleeper effect". Teacher expectations may also have had the effect of maintaining the teachers' grades, thus showing no significant changes in the grades of students.

The Self Correction technique may be successful with an elementary school child who is distractable and distracting, test anxious and a slow oral reader. During the 12 week program both parents and child developed and learned new ways of responding to school related work, i.e., reading.

This study also demonstrated the short term effectiveness of parents as collaborators in helping their child to improve attention span, oral reading rate, and to reduce test anxiety.

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CHAPTER I
INTRODUCTION

Statement of the Problem

One of the problems in education is that of low school achievement in students who have a variety of academic and personal-social difficulties. These difficulties are not solely related to measured intellectual functioning since these students have been assessed in the average to above average range. The students seem to have the ability, yet have difficulty converting their ability into achievement. Frequently their difficulties appeared to be related to motivational factors, especially the students' willingnesses to follow directions, cope with mistakes, and use self correcting behavior. However, two psychological factors reportedly involved with poor school achievement are high test anxiety and low attention span (Sarason, 1960; Phillips, 1978).

Poor reading skills also contribute to low academic performance. Silent reading, oral reading and being read to are three different reading activities utilized in academic learning. Oral reading rate is one reading skill that contributes to academic achievement. McCracken (1961) pointed out that students with low oral reading rate are poor school achievers. Fox (1972) also indicated the high correlation of poor reading achievement and poor school achievement.
Background

This writer's experience as a psychologist for 18 years includes the following observations: These same students who experienced school-related problems also experienced difficulties with their parents (Ginott, 1957; Larsen, 1973; Peck and Stalkhouse, 1973). Following directions, establishment of goals, and behavioral management were problems at home as well as at school. The interaction and communication efforts between parents and child appeared ineffective and contributed to diminished school performance (Bower, 1974; Sarason, 1971; Smith and Glass, 1976).

The available therapeutic approaches which provided individual long term treatment did not appear to noticeably change the student's classroom achievement or behavior (Silberman, 1970; Wolman, 1977). These students continued to exhibit poor school performance which appeared only to increase and entrench their negative self-image and attitude toward academic and personal behavior. Only occasionally was the individual seen together with his/her parents in therapy sessions and rarely did the therapist consult with the parents. Traditional therapies worked on personal emotional issues, but not on academic problems. In addition, the orientation of the therapist seemed to determine the goals and interactions exclusively within the narrow framework of the therapy sessions.

These observations indicated to the writer the need for a short term therapy that would actively involve the individual, assisted by his/her parents in a structured counseling-learning treatment focused on academic and behavioral improvement. This therapy would also involve the
individual in the determination of the goals and process of his/her therapy, and in immediate, noticeable, and measurable changes in the school and home.

Self Correction Psychotherapy

The author has developed a remedial approach labelled Self Correction Psychotherapy (SCP). SCP is a short-term, task oriented, individually directed, parent assisted, time/space structured therapeutic approach emphasizing the psychological aspects of learning which focus on willingness as a motivational factor that converts ability into achievement.

The short term psychotherapeutic technique is unique in that it manipulates the academic task of oral reading rate and a margin for error to control test anxiety and attention span to affect the quality and quantity of performance on a specific oral reading task. The use of an oral reading task reduces the difficulties in the transfer of learning to other academic learning situations. This technique is also relatively easy to teach to therapists and can be used by therapists of various orientations and experience in a variety of academic situations.

Statement of Purpose

The purpose of this study is to measure the effectiveness of a structured technique in Self Correction Psychotherapy over a 12 week period with 18 first through sixth grade boys and girls in public suburban schools in Northeastern United States to lessen test anxiety on school related tasks, to increase their attention span, to increase their oral
reading rate, and to improve their academic marks. An additional 20 students were in a control group for comparative purposes.
CHAPTER II
REVIEW OF THE LITERATURE

The first part of this chapter will define a short-term psychotherapeutic technique in Self Correction Psychotherapy (SCP) followed by a discussion of the key concepts and assumptions of this technique. The second part of this chapter will relate the relevant research to the hypotheses under investigation.

Definition of Self Correction Psychotherapy (SCP)

SCP is a short-term, task oriented, individually directed, parent assisted, time/space structured therapeutic approach which focuses on willingness as a motivational factor that converts ability into achievement. SCP establishes that a margin for mistakes is a part of acceptable behavior. It encourages the individual to establish and maintain a balance between the need to control and learning to accept control from others. SCP provides the opportunity for an individual to become more aware of his interactions with himself and others and of his behaviors on a task. It actively uses an individual's physical, intellectual, emotional and social determinants to accomplish self-determined goals. It allows the individual to explore, direct, assess, and correct social and emotional interactions with work, parents, therapist, and significant others. It does this within the parameters of an assigned structured task which serves as an evaluative device for both therapist and client. SCP ultimately aims to help the indivi-
dual to participate in self-correcting behavior.

Willingness Hierarchy

SCP focuses on the increasing or redirecting of the individual's motivation or will to convert ability into achievement. Achievement is perceived not as the result of ability alone, but also in terms of an individual's willingness to direct his abilities and energy toward the accomplishment of a particular task or goal (Black, 1974). Willingness is equivalent to internal motivation. Willingness is the observable demonstration of an individual's will to do (or not do) something (May, 1953, 1967). Willingness is also the dynamic process in which ability is converted into achievement.

It is essential to note that SCP differs from other means of improving academic performance. Traditionally it was believed that if ability was increased, achievement would also increase. Tutoring, special classes, extra help and resource room work, to name but a few, were typical examples of ways in which student's abilities (and hence achievement) were hoped to be improved. Yet, in many cases, these methods were found to be unsuccessful. It is the author's contention that although the student's ability may have been improved, his willingness to use the ability remained untouched and therefore there was no increase in achievement. SCP would focus on the student's willingness to make use of whatever abilities existed in order to improve school performance.

SCP helps the individual to work through a sequence of phases, each of which must be successfully dealt with, to an appropriate degree,
in order to move on to the next phase. These progressive, sequential phases are known as the Willingness Hierarchy. The four phases are: The willingness to follow directions, the willingness to admit mistakes, the willingness to accept errors, and the willingness to self-correct.

Willingness to Follow Directions

The first willingness through which the individual must work is the willingness to follow directions (Moyer, Newcomer, 1977). On a concrete level, the need for this is evident. In order for a child to succeed in school, it is necessary that he be willing to follow the directions of his teachers. Similarly, in order to achieve a comfortable home-living situation, it is necessary that the child follow his parents' directions. As an individual learns to follow directions he/she is learning how to accept control from others as a necessary condition for achievement and living with others.

The assigned oral reading task in SCP is designed with a specific set of directions to follow at the student's ability level. Thus, the individual can gain practice following directions, while having the opportunity to openly discuss with the therapist any difficulties or feelings he might encounter. The individual gains confidence in his ability to follow directions, concurrently perceiving the increased success and the internal and external gratification which accompanies appropriate achievements. In this manner, the individual is helped to become more willing to use his abilities to follow directions in all of his school endeavors.

On a different level, the willingness to follow directions takes
on added significance. In order to follow directions, it is assumed that the individual needs to be willing to trust the person from whom the directions come (Erickson, 1964). Without trust, the individual is unwilling to follow any set of directions presented to him. Thus, in order to achieve the first phase of the willingness hierarchy, both the individual and the parents must develop trust in one another and the Self Correction therapist. This trust is a basic necessity for any psychotherapy.

The basic trust develops as the individual, parents and therapist engage in the assigned oral reading task. The Self Correction therapist communicates a set of directions, to both the student and parents, which must be followed in order to accomplish the task. The Self Correction therapist demonstrates trust by assuming the individual and parent's willingness to follow the carefully spelled out directions. The individual and parents reciprocate this trust by following the directions and appropriately completing the Self Correction task. Note that the assigned oral reading task is designed so that as the individual and parents become more trusting and willing to follow directions, their achievement level increases. The individual and parents experience a sense of gratification that reinforces this trust and willingness to follow directions. Thus, SCP utilizing an academic task in the form of oral reading, enable the individual to become more willing to trust others within the self correction therapy sessions, and ultimately transfer this trust to others outside the therapy sessions.
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Willingness to Admit Mistakes

Once the individual has attained a level at which he is adequately willing to follow directions, his growth can continue into the next phase; a willingness to admit errors or mistakes. In essence, a willingness to admit error indicates an individual's ability to realistically perceive himself and his actions and to become aware of inappropriate behaviors and attitudes. Basically, a willingness to admit error is an intellectual and emotional function, with social overtones. It means that the individual is not deceiving himself or others and there is a greater awareness of ineffective behavior patterns. The willingness to admit mistakes begins to deal with the individual's fear and anger over mistakes.

The importance of this willingness can be viewed in terms of problem identification. Without a willingness to admit error, a person is limited to perceiving himself as without mistake or perfect. He may feel discomfort, depression, anger, fear, anxiety, or any number of symptoms indicating psychological pain, but he is unwilling, and therefore unable, to see his own actions or attitudes as part of the cause. The individual may blame others, or the situation, and is therefore unable to self-correct and bring about satisfying changes.

Self Correction Psychotherapy helps the individual to become more willing to admit mistakes by allowing a specified number of mistakes (error count) to be made on an assigned oral reading task. Oral reading mistakes are mispronunciations, substitutions, omissions and insertions. The parents monitor the individual's oral reading mistakes and relate
only the number of mistakes rather than the type of mistakes. The error count allows the student to make seven (7) mistakes per page without being penalized. This gives the student a chance to make a certain number of mistakes in a supportive atmosphere. In SCP, admitting a certain number of mistakes is encouraged and approved by both student and parents. Furthermore, the worth of a willingness to admit errors is reinforced through counseling within the therapy session. The therapist helps the individual and his/her parents to perceive how admitting mistakes ultimately helps the student to increase achievement at the task, while simultaneously helping him/her to learn what he/she does and does not know. The strength of the SCP lies in the fact that as the individual becomes more willing to admit mistakes on the assigned oral reading task, and perceives the benefits rather than just the deficits of doing so, he/she becomes more willing to admit mistakes in other academic areas.

In this sequential willingness hierarchy, there is a significant connection between the willingness to follow directions and to admit mistakes. It is essential that the individual achieve an appropriate level of trust and willingness to follow directions--and therefore psychologically trust others--before he/she can begin to be willing to admit errors. Psychologically, admitting mistakes is perceived as recognizing that the individual is imperfect and can make mistakes. This is a very difficult thing for many people to do, as it raises many fears about how the outside world will react to such knowledge. In our culture, many individuals perceive the admission of error as a sign of weakness, and this can produce a great deal of anxiety. For this reason,
in many instances the individual will deny the anxiety by not admitting the occurrence of mistakes.

Under certain conditions, an individual can be willing to admit mistakes. The primary condition is that the individual trust the outside environment not to psychologically injure him/her for allowing his/her mistakes to become known. The student must trust the significant others (parents) not to ridicule or hurt him/her because of his/her willingness to admit errors. Without a trusting relationship with others it would be exceedingly difficult, if not impossible, to help an individual to become willing to admit mistakes.

The other condition necessary for an individual to admit mistakes is that he/she perceive the benefits of such an action. As previously stated, both the self correction task and concurrent discussions about accomplishments with parents and therapist reinforce both the achievement and gratification that can be gained by being willing to admit mistakes. Thus, SCP helps the individual to reach an appropriate level of functioning at the second phase of the willingness hierarchy.

Willingness to Accept Mistakes

The third phase is a willingness to accept error. In some ways the movement into this phase of the hierarchy is the most difficult in self correction psychotherapy. Whereas the second phase involved identification of mistakes and the willingness to allow the external environment to know about one's mistakes, the third phase involves the ability of the individual to live with his/her mistakes. In essence, the willingness to accept error is the ability of an individual to feel
comfortable with the knowledge of his/her mistakes. Note that sequentially, the individual cannot learn to deal with, and be appropriately "comfortable" with the knowledge of his/her mistakes, until he/she has first identified the mistakes and become trusting of others not to degrade him/her for admitting their existence (Blanche, 1972; Murray, 1972). Hence, the individual must first be willing to admit mistakes before he/she can become more willing to accept mistakes.

The process of accepting mistakes involves the individual's development of trust in his/her self to control feelings of anxiety and anger over mistakes. The individual's trust in his/her self control leads to a positive self image and feelings of self worth. SCP helps the individual to become more willing to accept mistakes by accepting, without penalty, a specific number of mistakes on an assigned oral reading task at the student's level of successful reading rate (100 wpm). This gives the student an opportunity to accept his/her mistakes on the task in a supportive and approving environment. It is necessary that the individual receive approval from his/her parents and therapist for some of his/her mistakes on the oral reading task. He/she must learn to "let go" of the fear and anger over these mistakes. Being willing to accept mistakes by letting go of the fear and anger connected with these mistakes releases energy and attention that can be applied to the oral reading. It thereby increases achievement and also improves personal/social interactions.

Psychologically, it is assumed and appears that as the individual learns to accept errors on the assigned task then the individual accepts
him/herself as fallible, in that mistakes are an acceptable part of human functioning. Learning to accept mistakes through his/her performance and feedback on the oral reading task helps the individual to realize that part of the control over mistakes is within his/her control and partly determined by others. The individual learns that he/she can correct some mistakes and that is is acceptable not to correct all mistakes. The decision to correct a mistake depends on the development and acceptance of a margin for mistakes which is determined by others and the individual. The individual's acceptance of a margin for mistakes ultimately helps the individual to demonstrate self correcting behavior. As previously stated the individual needs to be encouraged and rewarded to accept mistakes. This is accomplished through counseling, and the interactions with the individual, therapist and parents, concerning his/her mistakes on the oral reading task.

Willingness to Self Correct

As the individual becomes more willing to accept mistakes, he/she moves into the final phase of the hierarchy, a willingness to self correct. The individual responds to the external directions and corrections of others initially and then assumes inner directions and correction for his/her performance. The individual establishes a balance between external reinforcers and self reinforcers to direct and correct his/her behavior. A willingness to self correct is the ultimate goal of SCP. Once achieved, it means that the individual is both willing and able to make appropriate and effective changes in his/her life. The individual willing to self correct can solve problems by readjusting the
self to deal with internal or external situations in order to achieve a more satisfying lifestyle.

In summary, there is a progression of phases leading up to a willingness to self correct. Without adequately working through each phase, the individual can never actually become willing to self-correct. This necessary sequential progression is readily seen in terms of trust. To be willing to follow directions, the individual must be willing to trust others. To be willing to admit mistakes, the individual must be willing to trust others with information that places the individual in a "bad light". To be willing to admit error, the individual must attain an emotional level of trust toward the external environment. To be willing to accept errors, the individual must achieve a degree of internal trust; a belief that he remains worthwhile and "good", although he is capable of making mistakes. Without these prerequisites, the individual cannot be willing to self correct, or make changes in his/her behavior, because of the anxiety and anger aroused by permitting his/her mistakes to become known to others as well as to him/herself. Finally, even at the willingness to self correct phase, the individual must become willing to trust him/herself to make appropriate and effective changes.

Margin for Mistakes

Although a discussion of a margin for mistakes was included in the previous section on the Willingness Hierarchy, the author believes a further elaboration is necessary.

Although the idea of having a margin for mistakes or errors is a fairly simple concept, it takes an added significance in SCP. SCP
emphasizes the need for a greater margin for mistakes in the realm of school work.

One of the functions of SCP is to help the individual perceive that making mistakes is acceptable. Various percentages for a margin for error were tried by the author over the years and a 20% margin for error was arbitrarily selected. To utilize 80% of an individual's abilities and allow a 20% margin for error seemed like a worthwhile and attainable goal for therapy. In school/achievement/grading an 80% level is considered an above average performance. If the individual, parents and therapists were trying for this above average performance of 80%, leaving a 20% margin for error, and if only a 60% level of achievement were reached, then all could be satisfied. On the other hand, if the individual were trying for a 70% level of achievement with a 30% margin for error and his actual achievement level was below 70%, then all would be dissatisfied. It was also decided after considerable experimentation and experience, that a 5 or 10% margin for error was too little and only served to increase the individuals anxiety level. The 20% margin for error was selected only to provide guidance for the individual.

In therapy the actual margin for error is established and maintained by the individual, therefore it will vary from person to person. It is suggested in therapy that a 20% margin for error is an acceptable margin, and hence, an appropriate number of mistakes, made on the assigned oral reading task, is accepted with no correction or penalty. For example, an individual is allowed seven mistakes on a page of oral reading selected on the basis that the individual can read the page at 100 words per minute. This means that he/she can make up
to seven mistakes (reading errors such as mispronunciations, omissions, substitutions, insertions) on the page and continue reading the next page. However, if eight or more mistakes are made on a page then the individual has to repeat the page (pay the penalty) until he/she makes seven errors or less, or until the half hour work session is finished. In this manner, SCP helps the individual to become more willing to make mistakes; ultimately decreasing his fear of making mistakes, and his fear of failure. In addition the acceptance of the individual's mistakes by others (parents and therapist) helps to lessen the anger that the individual may have experienced after having made the mistakes. Thus the acceptance of a margin for mistakes by the individual and his/her parents helps to decrease both anger and fear in the individual.

CONTROL NEED

A basic assumption in SCP is that an individual is born with the need to control him/herself and others, and to learn to accept control from others. Our life-long task is to establish and maintain a balance or equilibrium among controlling ourselves and others, and time and space. Balance conflicts exist because an individual's internal functions are out of balance with external environment in which he functions, or because of both. A balance conflict will influence both the individual and those around him. Balance conflicts are important to SCP because they create problems in the individual's life. The goal of SCP is to help the individual to develop a self-correcting system in order to create or maintain balanced systems which are acceptable to the individual and to others.
Few individuals invest their energy equally in all four systems. Nor would this be particularly desirable as people would lose their uniqueness and individuality. Different people invest their energy in differing amounts in the four systems.

An individual may choose to invest more energy in the physical system while another may choose to invest less energy in the social system. The individual chooses and maintains the distribution of energies in the four systems. The distribution of energy in the four options will be different and unique for each individual.

From observations it appears that like fingerprints, no two person's distribution of energies in the PIES model are exactly the same. The individual establishes and reestablishes his/her own balance or equilibrium in the distribution of energy to the four systems. According to Lewin (1935a) "the ultimate goal of all psychological processes is to return the person toward a state of equilibrium."

The amount of energy invested in a system or systems is determined by the individual on the basis of internal needs and attitude, and external environmental influences which at times may be unreasonable. Each system has an influence and interacts on the others. Human behavior cannot be examined or isolated into neat separate parts. Rather, it is the combining and integration, and balancing of all four systems by the individual that creates his/her behavior. An individual must learn how to adjust and control these systems. These systems are the avenues through which changes are implemented.

Often an individual will overinvest or under invest energy in one or more of the PIES systems creating an imbalance which is then demonstrated by inappropriate performance and behavior. Imbalances
Internal Balance Conflicts--PIES System

An internal balance conflict occurs when there is either an over investment to under investment of energy by the individual in any one of his/her physical, intellectual, emotional or social systems which results in too little or too much activity in a particular system.

There are 4 systems of functioning inherent in all human beings. They are the physical (P), intellectual thinking (I), emotional-feeling (E) and social-human relating (S) systems of human behavior.

The physical system involves physical activity and the ways in which the physical body relates to the environment (Friedman, 1974; Klein; Kurkowski, 1974; Curucharri, 1973; Segel, 1974).

The intellectual functioning involves the use of thinking or cognitive processes.

Emotional functioning involves the individual's attitudes and feelings.

The social system involves relationship patterns and interactions between the individual and others.

The four systems can be pictured as a ball or pie divided into four pieces (Fig. 1). Energy is always flowing throughout all four sections. As a person develops different needs and desires, more or less energy is directed by the individual from one system to another. Each individual has a given amount of energy. As the energy involved in one system increases, the energy level in the other system decreases.

Figure 1
and some of the resulting inappropriate school related difficulties are described in the following examples.

An individual with an imbalance in the physical system (see Fig. 2) may have difficulty sitting in his seat, may act out by hitting others, or may turn his/her energies within by withholding and not completing assignments or participating in class because the environment may be making unreasonable demands.

An individual with an imbalance in the intellectual systems due to less energy invested in this area (see Figure 3) may have difficulties making sight to sound relationships. Other decoding, association and comprehension problems may be evident. Their intellectual achievement may be less than their measured ability would indicate.

The individual with an imbalance of more energy in the emotional system (see Figure 4) may exhibit anxious or angry behavior by not paying attention, reading slowly with hesitations, being disruptive or showing concern over making mistakes.
The individual with an imbalance in the social system due to less energy invested in this area (see Figure 5) may exhibit withdrawn, preoccupied and withholding behavior. This behavior may result in the individual having difficulty in oral reading in front of the class and maintaining consistent classroom performance. The individuals expectations of him/herself have been in part formulated by input from others and at times the expectations of others as well as self may be unfair or unreasonable.

In summary, when an individual may give too little or too much energy to one of the PIES systems, an imbalance occurs, and then the individual must redistribute the energy to restore balance or establish a new balance. The shifting of energy from one system to another by the individual caused by internal and/or external influences is called a balance conflict in SCP.
The focus of this research was on the imbalances of the PIES systems that are exhibited by low school achievement, increased test anxiety, poor attention span and low oral reading rate.

Figure 6

External Balance Conflicts

Balance conflicts are caused by either internal or external control factors, or both. As previously described, an internal balance conflict occurs when there is either an over or under investment of energy in any one or more of the PIES systems resulting in too much or too little activity in a particular system.

External balance conflicts occur when the external environment such as floods, disease, fires, deaths, divorce and family and school upheavals cause a loss of balance within the individual. External balance conflicts more commonly occur in the shifting of the balance of control between the individual and others in the emotional and social areas of the PIES system. The individual needs to learn to accept controls determined by the eternal environment (Feinberg, 1977). SCP assumes that the individual actively chooses to respond to the demands of others. This position gives the selection, direction and responsibility to the individual yet includes behavior that accommodates both the needs of the individual and society. Many external balance conflicts find the individual in an extreme position. An example of
an external balance conflicts which every individual must work through is related to the give and take positions in relationships with parents. In terms of this example, the reader needs to perceive all individuals as being born in a taking position. The newborn baby is a dependent entity—it must take from the mother and environment in order to survive. However, as the child grows it is necessary that he/she no longer take as much, but rather give of himself as a means of achieving independency. The individual's growth process must then include a reestablishment of balances in order to ensure future survival and satisfaction.

If the child remains in this extreme taking position, an external balance conflict exists. The child does not need to give, either to himself or others, because he is receiving at least a minimum of what he needs to survive and be gratified. The danger lies in that the child is not receiving any practice at becoming independent—a quality which will become necessary when those from whom he is taking are no longer available. Hence, the extreme of the taking position can be viewed as carrying the seeds of its own destruction. The same can be seen at the other extreme, the giving position. In this case the child is cast in an entirely giving role, receiving little or no experience in taking. This child would always be giving which would have a negative effect on his interactions and relationships with others.

Most often there will be an imbalance in the give-take position. The child may be in control because he/she takes excessively from his/her parents. Or the parents may be in too much control because they give the child everything, and therefore take away the child's opportunity to learn to be independent.
The child attaches meaning and importance to parents and people and, therefore, to their rules. The well socialized individual usually has a positive attitude toward people, and he/she sees rules as necessary for the functioning of society (Bronfenbner, 1945). He/she is willing to modify his/her own behavior in order to adapt to society and to respect its needs and thus reduce his/her external balance conflicts in the emotional and social systems of the PIES model. Put it in terms of learning theory--people and society are reinforcers. In Freudian terms--adequate socialization requires that the individual moves from the pleasure principle of the immediate personal gratification to the reality principle of willingness to delay gratification for the sake of future or deferred goals (Freud, 1955). The individual in SCP has an opportunity to attach new meanings and importance to people, first, to his/her parents and later to his/her teachers. He/she also attaches new meanings and importance to parents' rules and regulations, and also to the rules and regulations as they apply to the assigned oral reading tasks.

The self correction therapy allows the individual to get rid of some of his/her negative attitudes toward his/her parents, then his/her teachers and other people. Self Correction Psychotherapy also allows the individual a chance to see that rules are necessary for the individual's functioning as well as for his/her functioning within a group. Parents represent a small group and a miniature society. SCP allows the individual to become more willing to change his/her own behavior in order to adapt or adjust to other people's demands and to set up a balance between his/her own demands and other people's demands. SCP also teaches an individual to respect his/her needs as well as other
people's needs, and to develop a balance system that can be effective in his/her relationship with other people and to him/herself. As the individual in SCP learns to please others, he/she also learns to please him/herself. Probably we should say he/she learns to please her/himself first and then, also, if he/she can please him/herself while pleasing others, he/she is that much ahead of the game. Over a period of time, an individual becomes anxious when he/she does something that is displeasing to those he/she values and loves, and he/she experiences anxiety regarding the possible loss of love or loss of approval. Self Correction Psychotherapy allows the individual to participate in a situation in which he/she performs an oral reading task to his/her satisfaction and the satisfaction of others, and this experience lowers his/her anxiety in regard to the possible loss of love or approval. SCP helps the individual to evaluate his/her performance on the oral reading task by him/herself and also to learn how to gain self-approval for the appropriate completion of this assigned task.

Assigned Task

This technique in SCP involves face-to-face consultations with the professionally trained person who helps the individual to focus on an assigned oral reading task. Oral reading is the selected task because it is a common and essential academic activity for students in elementary schools. Oral reading also provides a controlled way to monitor an individual's behavior.

The SCP therapist assigns an oral reading task from a basal reader at a level at which the individual can read orally at 100 words per minute or better. If the individual cannot read orally at the rate of 100 words per minute at the preprimer level, then the individual
begins at this level. The SCP therapist also designates seven (7) mistakes per page even for the preprimer level which often do not have 7 words on a page but it is necessary to hold the error count constant from page to page. In addition, if the child is not sure or doesn't know the pronunciation of a word, he/she is required to say the letters of the word to the parent that is monitoring the child and the parent gives the correct pronunciation to the child. A parent is required to monitor the child's oral reading at home for 1/2 hour each afternoon or evening for the seven days of the week by telling the child how many reading mistakes the child made on a page and recording the number of mistakes (mispronunciations, omissions, substitutions, insertions) per page on a sheet of paper. The parents are cautioned not to give any additional input or feedback. If the number of oral reading mistakes made by the child on a page does not exceed the specified number, the child continues to read the next page. If the number of oral reading mistakes exceeds the allowed number of mistakes set by the SCP therapist, then the page is repeated until the number of mistakes is equal to or less than the number of mistakes allowed (error count). Exceeding the error count and having to repeat the page assists the child to admit and accept error.

This assigned oral reading task affords both the individual and his/her parents with a way to monitor and evaluate the individual's oral reading and achievement in a less judgmental or test-like manner. This will hopefully contribute to the reduction of an individual's test anxiety.

The individual's daily performance on the assigned oral reading
tasks allows him/her to observe his/her behavior, to receive immediate feedback and reinforcement from his/her parents, and if necessary, to make changes. The parents acceptance of a margin for mistakes for their child's oral reading performance is intended to reduce anxiety in both parents and child. The individual's 12 weeks practice and gain in control over the margin for mistake on the assigned oral reading task will reduce his/her test anxiety. In addition, the individual's increased reading achievement will act as positive feedback which will hopefully also help to reduce his/her general anxiety.

Research Related to the Specific Hypotheses

This section will include a statement of the hypotheses under investigation. After each hypothesis relevant research will be discussed. The first hypothesis is concerned with reducing the negative affects of test anxiety on reading achievement. Hypothesis 2 and 3 are concerned with attention span and oral reading rate, both of which are negatively influenced by anxiety and both are specific observable behaviors that help to contribute to reading achievement. Hypotheses 4 is concerned with the effectiveness of a treatment technique in SCP to improve academic achievement.

Research Related to Test Anxiety

Hypothesis 1: Children (1st through 6th grade) with mild and moderate learning difficulties who receive 12 weeks training in the self correction structured technique (includes parent monitoring) will exhibit a difference in test anxiety as measured by pre and post testing of the Test Anxiety Scale for Children (Sarason, et al, 1960) than comparison children with mild and moderate learning difficulties who did not receive this treatment.
Definition

The definition of anxiety is not always agreed upon in the psychological literature but it is generally considered to include feelings of uneasiness, unpleasantness, helplessness, insecurity, self devaluation, bodily tension, apprehension, all of which are consciously experienced.

A common and specific anxiety arousing condition occurs when children are in a test-like situation. Sarason, et al (1960) define test anxiety as frequent and important reactions to test situations produced when the child perceives the situation as one in which others, including parents, will pass judgement on his adequacy. Test anxiety lowers the independent functioning of a child in a problem solving situation. It prevents awareness and responsiveness to the external task (attention). Test anxiety involves more awareness of self than of the external situation. Test anxiety is associated with difficulties in the school learning situation and in reading and math (Sarason et al 1960).

Sarason, et al (1960) pointed out that children, before they enter school, are initially evaluated by their parents in terms of the quality and quantity of their performances. To the extent that the child perceives these situations as ones in which others will pass judgement on his adequacy, then they are tests or test-like situations which produce test anxiety. These childhood experiences of being evaluated are test-like situations and produce test anxiety in the child. These test-like situations occur before the child enters formal schooling.
When the child enters school, it is the teacher, similar to the parents, who is then in a position of authority, sets goals for the child and evaluates or passes judgement on his/her behavior. Parents and teachers both attempt to influence the child's behavior toward himself and others. The similarity of the roles of teachers and parents tend to engender test anxiety from the child (Sarason, et al, 1960).

Incidence of Test Anxiety

Kondas (1967) reports that debilitating test-related fears is a serious problem for 10% of the school population while many others report 25-30% of the same population as high test anxiety (Cotler & Palmer, 1970; Nottleman & Hill, 1977; Sieber, Kemeya & Paulson, 1970; Wine, 1979).

Test Anxiety and Intelligence and Achievement

The pioneering and classical study of Sarason, Davidson, Lighthall, Waite and Ruebush (1960) explored the interfering and negative affects of test anxiety upon intellectual and academic performance. Since the effect of intelligence on achievement tests is significantly large (.50) the correlation of achievement or intelligence tests with test anxiety as measured by the TASC would not be expected to be large (not more than -.50).

Sarason, et al, administered intelligence and achievement tests (including reading) to 507, 2nd through 5th grade middle class students in Greenwich, Connecticut, and 1399, 2nd through 5th grade middle class students in Milford, Connecticut and the results were correlated with the TASC and TR (see Table 2).
The upper section of Table 3 shows that the direction of the relationship is negative, indicating that as the level of test anxiety increases, the level of measured IQ and mean achievement decreases. Only the Milford Schools' coefficients (average -.24) are large enough to be considered significant (p < .01). Table 3 also shows that as the grade level increases, test anxiety as measured by the TASC also increases with possible increases in the interference with intellectual functioning and achievement.

McCormick and Karabinus (1976) compared measures of self esteem (Self-Esteem Inventory, SEI developed by Coopersmith, 1967), general anxiety (General Anxiety Scale for Children, GASC developed by Sarason, et al, 1960), reading and arithmetic (total scores for reading and arithmetic from the Metropolitan Achievement Test, Elementary Level, Durest, et al, 1971), and I.Q. (1970 Otis-Lennon Mental Ability Test, Otis and Lennon, 1970) among 1235 White, Black and Spanish surname 4th, 5th and 6th graders. The following is a summary of their findings:

White students in grades 4, 5, and 6 placing in the high third of the distribution of reading and arithmetic achievement and IQ scores had significantly higher self esteem (SEI) mean scores than white students classified in the low third in reading and arithmetic achievement and IQ scores.

White students in grades 4, 5, and 6 placing in the high third of the distribution of reading and arithmetic achievement scores and IQ scores had significantly lower test anxiety (TASC) mean scores than did those white 4th, 5th, and 6th graders falling in the low third in reading and arithmetic achievement sores and IQ scores.
All significant results in the test anxiety (TASC) comparisons with reading and math achievement testing were in agreement with Sarason et al, (1960), i.e., in general, high performance was associated with low anxiety and more significant differences were found in relation to test anxiety (TASC) than in general anxiety (GASC).

Gjesme's study (1972) examined the relationship between test anxiety as measured by the Test Anxiety Scale for Children (TASC, Sarason, et al, 1960) and school performance of 139 boys and 157 girls in the 7th grade in light of the achievement motivation theory. For high IQ boys, there were no significant relationships between the TASC and school marks. For moderate IQ boys, there were significant negative correlations between TASC and their marks. For low IQ boys no relationship was found between TASC and school marks. High IQ girls had the lowest measured test anxiety and were most negatively influenced by it, while low IQ girls with the highest measured test anxiety were not inhibited by their anxiety.

Gjesme concluded that the individual high in test anxiety finds all achievement tasks, where failure is a distinct possibility, more unattractive than does the individual low in test anxiety. Therefore, the high test anxiety person needs more positive, extrinsic motivation than does the low test anxiety person to perform the same tasks.

Similarly Progrer's et al (1973) study of 112 (61 males, 51 females) sixth graders indicated that high test anxiety children, as measured by the TASC, needed a more external structuring or organization on tasks of sentence outlining and paragraph abstraction than low test anxious children.
Gjesme (1976), a Norwegian psychologist investigated test anxiety and the effects of expectancy of length of time to goal on verbal and numerical problem solving performances. Gjesme's rationale for this study was that the tendency to approach a goal or task is stronger the nearer in time the individual is to it. The tendency to avoid a feared goal or task is stronger the nearer in time an individual is to it. The avoidance pattern increases more rapidly with nearness in time than does the approach pattern.

Gjesme randomly selected 392 sixth grades to whom the Test Anxiety Scale for Children (Sarason, et al, 1960) was given. This test was translated for Norwegian research by Rand (1960). The students also received a booklet of easy verbal and numerical problem tasks to solve. The verbal problems were three to six letter anagrams which were to be put together to make nouns. The numerical problems were printed in the booklet and required circling digits as well as adding and subtracting them. The sixth graders were separated into four experimental groups and were told different times (1 week, 1 month, 1 year) at which they were expected to receive the next test. After working for 20 minutes the students were debriefed and told that the next test times would not happen.

Gjesme found that test anxiety as measured by the TASC was related significantly negatively (ave. - .15, p < .05) to both verbal and numerical measures of performance under all experimental conditions of varied time expectancies. The high test anxiety students (N=55) showed a significant (p < .10) decrease in the number of problems solved correctly and a tendency (not significant) to decrease the number of
problems attempted as the future task approached in time. It was also observed that the high test anxiety students increased the task irrelevant responses (loss of attention) which reduced their quality and quantity of their problem solving performances.

Gjesme concluded that the definition of test anxiety implies that it is, more or less, directed toward future achievement or future situations. Thus, an individual with high test anxiety is expected to anticipate more negative affects in connection with his/her future achievement or situation than an individual with low test anxiety. For the individual with high test anxiety, the level of aroused test anxiety increases as a future achievement event approaches in time. Conversely, an individual with low test anxiety has fewer negative experiences associated with future achievement situations, exhibits and anticipates fewer avoidance reactions, and has a positive experience in achievement situations. Psychological distance in terms of time is an important determinant in the arousal of test anxiety. The SCP technique aims to lower test anxiety and improve academic performance.

Durnford (1967) administered the TASC to 150 6th graders. Absenteeism and transfer reduced the number of students in the study to 11 females and 12 males with low test anxiety and 13 females and 14 males with high test anxiety. An observer recorded teacher-pupil interactions for 4 hours. Teachers rated each student after the observation period. Durnford found that high anxiety students required more teacher time, were less willing to interact, were less socially acceptable, were more dependent and had lower academic achievement than the low anxiety students. The females had higher test anxiety scores
than boys. Durnford noted that teachers initiated more interactions with males than females.

Other researchers have studied the negative affects of test anxiety on writing (Daly, 1972) and arithmetic (Chansky, 1966) and found that high test anxiety significantly lowers written and math achievement.

Test Anxiety and Reading

Johnson and Hammel (1971) studied the effect of three modes of achievement test administration (approval, standard and disapproval) on the reading achievement of 305 (153 boys, 153 girls) randomly selected fifth graders using test anxiety, as measured by the TASC, and sex as blocking or leveling factors. Johnson and Hammel found that increased test anxiety in these children regardless of sex and administration mode was significantly associated with lowered reading achievement test performance. For a significant number of the fifth graders involved in this study, their test anxiety had an inhibitive effect on reading test performance. The investigators concluded that pupils cannot demonstrate their proficiency in reading because of high or even moderate amounts of test anxiety.

Cotler and Palmer (1971) studied the relationship among contingent social reinforcement, sex, test anxiety as measured by the Test Anxiety Scale for Children, achievement, and reading performance of 120 4th-6th grade boys and girls on a series of matched paragraphs (Gray Oral Reading Test). They found that the overachieving high test anxiety boys had more errors on the reading test paragraphs than underachieving high test anxiety girls. For boys, the overachieving high test anxiety
boys in the no-reinforcement condition performed significantly more poorly than all but two other groups. The underachieving high test anxiety boys performed least well using rewards, while the overachieving low test anxiety boys performed best using rewards. For girls, underachieving high test anxiety girls' pattern of performance was similar to that of the overachieving high test anxiety boys, although it was more attenuated. The reading performance of the overachieving, high test anxiety boys was significantly and negatively effected by anxiety. This was not so for girls.

Cotler and Palmer's results indicated that reinforcement and the individual difference factors significantly interacted to affect reading performance. The performance of boys were more variable, more highly related to test anxiety and achievement level, and significantly more influenced by social reinforcement of rewards than girls.

Cotler and Palmer's study points out that boys in elementary school need more social reinforcement from their parents and teachers than do girls. Elementary boys are less task oriented, less inner directed and more dependent upon external motivation than girls.

Mulroy (1968) administered achievement tests and the Test Anxiety Scale for Children (TASC) to 198 primary school children from different social status and age groups. Mulroy found that anxiety had a detrimental effect on reading and arithmetic for all children tested regardless of sex, age or social status. Contrary to Mulroy (1968) and similar to Sarason, et al (1960), Dodd's (1978) study of 150 7th graders indicated that the students' sex was the most significant correlate of test anxiety as measured by the TASC.
Kestenbaum and Weiner (1970) also explored the relationship between test anxiety and its negative effects on achievement in reading. They administered the TASC, the Childrens Achievement Motivation Scale (CAMS) and the Stanford Advanced Reading Achievement Test, Forms K and L to 43 male and 36 female middle class 7th and 8th graders and found that for both male (-.43, p < .01) and female (-.38, p < .05) subjects, reading performance was negatively affected by test anxiety.

Holmes, Charles and Curtis (1973) administered the TASC to 253 male 4th graders from which they selected 134 for their study. Reading Comprehension was measured by a Cloze procedure. Additional achievement testing obtained vocabulary scores and reading and test times. They found that test anxiety had little effect on reading comprehension using a Cloze procedure. However, test anxiety had a negative effect on vocabulary performance and reading and test times.

Test Anxiety and its Relationship to Sex Differences

With respect to sex difference Sarason, et al (1960), found that middle socioeconomic girls obtained significantly higher test anxiety scores than boys. Tryon, et al (1973) found similar results for lower socioeconomic girls.

Test Anxiety Reduction by Psychotherapy

Test anxiety may be measured physiologically, by interviews, or through self reports. Barabasz (1975) physiologically measured the test anxiety of 102 5th, 6th and 7th graders by the Galvanic Skin Responses (GSR) polygraph. These students were also pre and post tested on the California Achievement Tests (CAT). These students
received 4 one hour group sessions of systematic desensitization psychotherapy. A comparative group was used as a control. Upon completion of the psychotherapy, physiological testing with the GSR polygraph indicated a significant \( p < .01 \) reduction in test anxiety for those students preclassified as high test anxiety and a significant \( p < .01 \) improvement in their reading comprehension scores on the California Achievement Test (CAT) while the students with low test anxiety and controls showed no significant changes.

Barabasz's (1975) study points out that test anxiety is measurable and that a reduction in test anxiety by short term psychotherapy is related to an improvement in reading. The physiological measurement of test anxiety avoids some of the difficulties of verbal assessment of test anxiety through interviews or self reports (Paul and Bernstein, 1973).

Summary

A review of the literature has found the following studies relevant to the SCP structured technique to be used in this study. Research indicates many different definitions of anxiety. One common and specific anxiety is that which Sarason, et al (1960), call test anxiety which is aroused in school on academic situations when the student perceives that someone is going to evaluate or pass judgement of his/her adequacy. The SCP technique in this study will permit the child to be monitored in a controlled evaluative manner by his/her parents which will reduce test anxiety. The SCP structured technique will increase the child's awareness of his/her mistakes and at the same time provides positive feedback from his/her parents with respect
to an acceptable margin for mistakes.

Test anxiety is a construct that can be measured physiologically (GSR polygraph) and verbally (self reports and interviews). The Test Anxiety Scale for Children (TASC, Sarason, et al, 1960), a widely used and accepted measure of test anxiety in elementary children was used in this study. Test anxiety and its negative effects on reading and school achievement is of serious concern to parents, educators and others working with children. Studies have shown that high anxiety, independently of intelligence and social class, negatively affects academic achievement, attention and reading. The high anxiety child needs more external structure and organization.

The SCP technique was developed as a structured technique to provide external structure and organization to reduce test anxiety. Research has found that the high anxiety child will exhibit more avoidance reaction the closer in time he/she is to be fearful situation. He/she will try to avoid reading if it is a fearful situation. Boys need more social reinforcement and SCP technique utilizes the parents of the child as social reinforcers.

Research has reported the effectiveness of short term psychotherapy to reduce test anxiety and to bring about an improvement in reading.
Research Related to Attention

Hypothesis 2: Children (1st through 6th graders) with mild and moderate learning difficulties, who receive 12 weeks training in the self correction structured technique (includes parent monitoring) will show a difference in attention as measured by pre and post testing on a timed oral reading task than comparison children with mild and moderate learning difficulties who did not receive this treatment.

Among the observed and counted overt classroom behaviors, attention is one of the major factors which is consistently linked to academic performance (Jackson, 1968). Attention to task has also been significantly related to reading achievement (Samuels, Weiner, and Tumer, 1974; Heriot, 1973).

Definition of Attention

A variety of terms such as paying attention, focus of attention, attention span, task orientation, concentration, on task behavior, distractability, hyperactivity, figure-ground, decenation, field dependence-independence, impulsivity, etc., are used in the literature to describe attention.

English and English (1958) in their Comprehensive Dictionary of Psychological and Psychoanalytical Terms define attention as the active selection of, and emphasis on, one component of a complex experience and the narrowing of the range of objects to which the organism is responding; the maintenance of a perceptual set (readiness to perceive the environment in a certain way) for one object and disregard for others; the length of time a person can attend to one thing.

Other dictionary definitions are the number of objects which can be attended to in a brief period of time (Harrman, 1962); the
length of time that an attentive consciousness can be maintained without change in degree (Warren, 1962). Cruickshank and Paul (1971) defined distractibility as the inability to filter out extraneous stimuli and focus selectively on a task.

Attention is a measurable construct and is often measured by direct observation in the classroom. Gaver and Richard's (1979) five year study utilized naturalistic observation of second grader's (22 boys, 23 girls) attention in the classroom. Frequency counts on categories of attention or inattentive behaviors were observed and recorded in the classroom by a trainer observer.

The category of attentive behavior was described as being intent on ongoing work or discussion, task oriented, doing what he/she is supposed to be doing.

The categories of inattentive behaviors were described as 1) Involved in doing something of a non-academic nature that is not related to the ongoing work of the class, 2) actively engaged in academically oriented business of his own, not the ongoing activity of the class, 3) making social remarks, 4) lapses in attention to tasks such as looking around, and 5) daydreaming.

Meyers, Attwell, Orpet (1968) have also presented evidence that observational measures of attention are correlated positively with achievement. In their extensive study of kindergarten students, frequency counts of attending responses were the single most powerful correlate of standardized achievement test performance among the observational measures researched.

Other investigators have measured attention by standardized tests
such as the WISC or WISC-R and recently it has been measured by observational techniques in the classroom.

Glasser and Zimmerman (1967) state that the Digit Span and Arithmetic subtests of the Wechsler Intelligence Scale-Revised (WISC-R) measure the ability to attend, involving such aspects of attention as mental alertness, ability to suspend irrelevant thought processes while attending, and focus of attention.

Huelsman (1970) found that 20 of 23 studies comparing low scores of WISC subtests in Information, Arithmetic and Coding (requiring attentional skills) were indicative of poor reading patterns in under-achieving fourth grade readers.

Attention and Test Anxiety

Wine (1971) states that the test anxiety child has trouble focusing attention on relevant aspects of a task. Wine's (1979) later study assessed elementary students with different levels of test anxiety in a class period before an examination, and again with the same class period when no exam was scheduled. The results of the study showed that when an exam was expected, low and moderate test anxiety students showed greater attention to teacher directions, and paid more attention to task. Students with high test anxiety attended less to teacher directions and paid less attention to task.

Other investigators have considered various techniques for increasing attention and reducing anxiety. Linden (1973) considers meditation as a technique for training attention. This training intensifies the individual's alertness to his/her environmental sensory data. Meditation practice trains the individual to focus
his/her attention on an object or progress (figure) and to resist
distraction of other sources of stimulation (background). Twenty-six
3rd grade children were given meditation practice over an 18 week
period. A control group was formed. The results indicated that
subjects who practiced meditation reduced their test anxiety, as

Linden further states that anxiety and relaxation are in-
compatible feeling states, and meditation practice trains the individual
to relax. It does this by teaching him/her to stay in the present and
detach him/herself from distractions. This results in the individual's
ability to volitionally decrease his/her level of anxiety and increase
his/her attention.

Attention and Intelligence and Achievement

Attention was one of the criteria for selecting studies for
review by Hoge and Luce (1979). Six of the eight studies reviewed
showed a significant contribution of attention in the improvement of
academic achievement.

Measures of attention emerged as powerful predictors of achieve-
ment in McKinney's, et al, study (1975). Again, attention and in-
attention emerged as significant predictors of achievement in Cobb's
study (1972). Hallahan, et al, (1973) pointed out that high achievers
attend selectively better than low achievers.

Noland and Schaldt (1971) assessed the ability of normal and
retarded readers to sustain visual attention and found that the
attention of the retarded readers was significantly poorer during a 30
minute task than for normal readers.

Browning (1967) found that elementary children with learning problems were less sensitive to following instructions which indicated weaknesses in the alert aspect of attention.

Gaver and Richard's (1979) five year study utilizing naturalistic observation of 45 second graders' attention in the classroom was found to be a reliable means of predicting SRA achievement test performance \( (r=.52, p < .01) \) as well as teacher grades \( (r=.31, p < .05) \). When the effects of intelligence were controlled statistically, attention to task continued to be a statistically significant predictor of standardized achievement test performance which included reading \( (\text{partial } r=.36, p < .05) \). Controlling for social class standing, in addition to IQ, had little effect on the positive contribution of attention to achievement. Thus, following directions and doing the assigned tasks is a significant variable in academic achievement including reading.

Both Lahaderne (1968) and Luce and Hoge (1977) showed the partialing out of IQ scores only reduced the magnitude of correlation between attention and achievement. Lahaderne (1968) also found that attention significantly influenced the outcome of measured IQ scores.

Firestone and Brody (1975) and McKinney, et al (1975) studies also showed that behavioral data of attention contributed to the prediction of achievement independently of IQ.

Heriot (1973) also controlled for intelligence and found that attention is an important and significant requisite for achievement and that attention is an important and significant requisite for achievement and that attentional tests generally distinguish between
underachievers and overachievers better than other tests. Attentional tests best identified underachievers. Many other investigators have reported attention as a significant factor in the improvement of student achievement (Cobb, 1972; Hall, Hypperts and Levi, 1977; Laherdern, 1968; McKinney, Mason, Perkerson, and Clifford, 1975; Perkins, 1965; Samuels and Turnure, 1974; Soli and Devine, 1976; and Spaulding and Papagerogiou, 1972).

Other researchers have demonstrated the effectiveness of various techniques such as longer assignments, asking test-like questions, using different classroom management strategies, and breathing control using biofeedback and behavior modification, for the improvement of attention and academic achievement.

Attention and Longer Assignments

Dangel and Hopkins (1979), investigated the effects of different length assignments on the classroom attention and academic performance of fourth and sixth grade children during daily math periods. Using a reversal design, longer assignments were shown to increase the percent of intervals of student attention. While the percent of problems completed decreased with longer assignments, the actual number of problems completed increased. Changes in the percent of problems correct were more apparent on a day-to-day basis than across the experimental conditions, and the students worked a greater number of problems correctly under the longer assignment conditions. Dangel and Hopkins also suggest that the length of assignments be held constant for a reliable measure of improvements in attention and academic
achievement. Longer assignments provide students with a greater number of opportunities for practice and reinforcement, which may in turn enhance skill acquisition and test performance. This study demonstrated that increased assignment length can be an easily manipulated, functional procedure to improve attention and academic performance.

In a series of ongoing studies conducted by Juniper Gardens (1980) School Research Group at the University of Kansas, increased opportunities to practice have been shown to improve student's academic performance in reading dramatically at several grade levels. They demonstrated that procedures which increase student's academic task practice are effective in increasing attention and achievement.

They conducted a survey of school day activities and found that reading and math activities comprised the first and second most frequent activities of the school day consisting of a combined 55.5%. Reading aloud accounted for only 2.9 minutes per 6 hour day.

They then focused their efforts on finding more effective procedures for teaching reading through the use of parents. This research has shown that there is a variety of procedures which parents can be taught to use which will increase academic performance. Some of these procedures included parents listening to their child's oral reading. This procedure also increased the daily instructional time for students.

This study demonstrated that these procedures could increase attention in the classroom and thereby improve reading achievement.

Similarly, Fox (1972) found that acquisition rates and accuracy
levels in reading for several elementary school children were substantially increased simply by the amount of practice time the children spent in oral reading.

**Attention and Questioning Techniques**

McKenzie and Henry (1979) researched the effects of questions asked as "test-like events" on attention and achievement. Questions asked as test-like events differ little from individually addressed questions in nature. The essential difference is that "test-like event" questions demand an overt physical response such as raising hands from every pupil to every question.

Fifty-two 3rd grade students were randomly assigned to two groups and exposed to a standard lesson with the same questions. Control subjects were called upon randomly while all experimental students were asked to raise their hands and respond to every question.

Observers measured the students attention during the reading of the initial worksheet by direct observation in the classroom. They assumed and observed that inattention to the reading task would be indicated by the students briefly looking away from the task. Observers recorded indicators of off-task behavior (inattention) by scanning rows of pupils at three minute intervals. Any whispering, doodling, looking away from instructive materials, etc., was recorded as inattentive behavior.

McKenzie and Henry found that questions addressed randomly to individuals are less effective than questions used as "test-like events," which require an overt physical response from every pupil. They also found that inattention was half as frequent in the experimental group.
and their achievement increased dramatically.

A replication of the above study was done by McKenzie (1979). Fifty-one 3rd grade students were randomly assigned to two groups, both groups were exposed to a standard presentation on the concept of first-class levers and were asked the same questions in both treatments. Experimental students were all required to make overt responses to every question, while questions to control students were addressed to one individual at a time. The results of this study were similar to the previous study in that those students in the experimental group exhibited significantly better attention than control students and classified new examples of levers more accurately. McKenzie concluded that it is possible to ask oral questions in such a way that all pupils respond frequently, thereby increasing attention.

Attention and Classroom Management Strategies

Studies by Borg and Langer (1975) in the earlier revisions of the Utah State University (USU) Classroom Management Program, demonstrated that teachers in the regular elementary classrooms who received training in classroom management strategies obtained significant improvements in their students attention to task.

Borg and Ascione were involved in a later (1969) revision of the USU Classroom Management Program. Some of the classroom management strategies used and monitored in this study were as follows: Teachers specified desirable student attentive behaviors and reinforced them while ignoring undesirable student inattentive behaviors. Teachers told students to stop their inattentive behavior publicly, privately, or non-verbally, by moving closer to the student.
The teachers avoided direct confrontation with a student displaying inattentive behaviors and concurrently praised the attention to task behavior of other students. Teachers used a positive questioning technique in which the teacher framed a question, paused to allow students time to prepare an answer, then called on a student to respond instead of calling on the student first and asking a question.

The 99 intermediate grade students in the experimental group made significantly greater improvements in attention (17%, p < .001) than the 77 students in the control group. Inattention decreased at nearly twice the rate for the experimental (38%) as compared to the control group (20%)

**Attention and Behavioral Training**

Simpson and Nelson (1974) involved attention training through breathing control, incorporating biofeedback and operant conditioning principles in their study of six children (ages 6 to 8 years old) from a private school for children with learning disabilities. Three were assigned to a group given the breathing control and attention training, and three assigned to a control group. Simpson and Nelson pointed out that breathing is a very sensitive behavior and is highly related to other body activities, especially gross body movements such as those often displayed by hyperactive children. The regularity of breathing by the individual during attention appears to be a part of an attending behavior pattern. Measures obtained before, during, and after training showed improvements in attention and supported the feasibility of this training approach.

Other investigators have explored the behavior of hyperactive
students and have found that one of the primary symptom patterns of hyperactive students is their inability to focus their attention (Clements, 1966; Wunderlick, 1969 and Friedman, 1971).

Two general treatment approaches most frequently employed with hyperactive students to improve attention are drug therapy and behavior modification. Weny and Sprague (1969) suggest that behavior modification programs should not only focus on the reinforcement of eliminating undesirable behavior such as excessive motor activity but reinforcement should also be directed at establishing desirable behaviors such as attention.

Summary

A review of previous research has indicated the following findings that will be utilized in the SCP structured technique for this study. Although there are a variety of labels for attention, it has been described and measured by direct observation and timing of an individual's behavior. The SCP technique measured an individual's attention by the length of time spent without interruption on an oral reading task. Research findings have shown that an increase in attention independently of intelligence contributed to an improvement in academic achievement and reading. Research indicated a variety of techniques that demonstrated improvement in attention which is linked to an improvement in academic achievement and reading. The SCP technique was developed as a structured technique for improving an individual's attention using a school related task of oral reading and parents as monitors. It is likely the SCP technique increased the length and frequency of oral
reading practice and the length of daily practice will be held constant. Increasing the length of oral reading practice and holding the length of practice constant was shown to increase attention and reading achievement. In the SCP technique, daily oral reading practice was a way of providing daily feedback and reinforcement by the parents on the improvements in the child's attention and oral reading achievement in words per minute.

Other research has found that a reduction of anxiety increased an individual's attention which contributed to improvement in following directions and reading.

Research Related to Oral Reading Rate

Hypothesis 3: Children (1st through 6th graders) with mild and moderate learning difficulties who receive treatment for 12 weeks in the self correction structured technique (includes parent monitoring) will demonstrate a difference in oral reading rate as measured by the pre and post tests of the Gray Oral Reading Test than children with mild and moderate learning difficulties who did not receive this training.

Oral reading rate is based upon the number of words that an individual can read orally in a specified time at a particular level of reading difficulty and is expressed in words per minute (Gray, 1961).

Oral reading involves both the visual and auditory sensory channels. For reading instruction, Schlesinger and Meadow (1972), point out that oral reading is more desirable than other modalities (listening and writing) because oral reading requires that the student actively integrate the visual and auditory modalities as well as extract the meaning of what he/she is reading.
The previously mentioned studies of the negative influence of test anxiety on academic achievement and reading, and the positive effects of attention and intelligence on achievement and reading are assumed to be factors that similarly effect the oral reading rate component of reading. The following additional factors which contribute to the improvement of oral reading rate were selected for discussion. They are the level of difficulty of reading material, word recognition, phrasing, impulsive/reflective approach, and number of reading errors. There were many studies devoted to the improvement of oral reading and only a few investigated oral reading rate.

**Level of Difficulty of Reading Material**

An important factor in the acquisition of reading skill is the level of difficulty of the reading material. This principle, advanced by Durrell in 1940, states that "the most important factor in meeting a child's reading needs is the provision of reading materials suited to his level of ability... A child with second grade reading ability experiences confusion and discouragement in attempting to read fourth grade books.

Bond and Tinker (1973), stated that "the failure to adjust the material and the instruction to the range of reading capability found within the classroom is probably the most important single cause of reading disability." Chall and Feldmann (1966), and Jones (1948), reported significant positive effects when ability and instructional levels are matched appropriately. Jorgenson (1977), reported statistical support between the accuracy of the match and improvement in classroom behavior.
This position is supported by the majority of reading specialists, including Bond and Tinker (1973); Harris and Sipay (1975); May (1973); and Zintz (1975).

Jorgenson, Klein and Kumar's (1977) study included 41 third through sixth grade boys with IQ ranges from 90 to 115 from an urban, primarily black elementary school. Reading ability level was determined by the Peabody Individual Achievement Test (PIAT), Dunn and Markwardt, 1970. Student behavior was assessed by the Vinter Pupil Inventory (Vinter, et al, 1966); and achievement was determined by pre and post testing with the Stanford Achievement Test, using only the word knowledge and paragraph meaning subtests.

Results of the study indicated that the accuracy in match between ability and level of material difficulty was not related to gains in reading achievement, but was significantly related to classroom behavior. The direction of the correlations indicated that as material became easier for students, classroom behavior tended to improve and conversely, as materials became more difficult, appropriate classroom behavior decreased.

Oral Reading and Word Recognition

Research and practice on reading and reading disabilities was focused on word recognition (Weaver and Rosner, 1979). Reading included being able to recognize words, transform visual symbols into language, have an adequate vocabulary, and comprehend or understand what is read.

Word recognition accounts for much of the variance in reading comprehension \( r = .82, p < .001 \) (Weaver and Rosner, 1979).
A strong relationship was shown to exist between auditory perceptual skills and primary grade reading achievement (Rosner, 1974). This fact was not surprising, since most primary grade reading programs concentrate heavily on teaching word recognition skills (Chall, 1967) and the relationship between the auditory perceptual skills and word recognition is well documented (Rosner, 1974).

Weaver and Rosner (1979) found that auditory perceptual skills predicted reading comprehension (which involves word recognition) better than listening comprehension. This difference in correlations was expected because auditory perceptual skills were closely related to early reading which mainly focused on developing word recognition skills. A partial correlation coefficient was also calculated by Weaver and Rosner (1979) between visual perceptual skills and reading comprehension, while word recognition skills were held constant. By "partialing" out the variance explained by word recognition, the correlation coefficient increased from .45 to .66. The total explained variance between visual perceptual skills and reading comprehension was increased by roughly 12%.

Measures of reading comprehension by definition, however, require word recognition. If students have poor word recognition skills, the resulting comprehension test scores necessarily reflect this inadequacy and interfere with any true measurement of comprehension ability (Weaver and Rosner, 1979).

Studies by Biemiller (1971) and Weber (1970), revealed that 40% of all errors for children in first grade occur when a word with the same initial consonant is substituted for a word in the test (e.g., "mat" for "man"). Introductory word recognition instruction in basal
reading systems have taught children to recognize words by the cueing from the initial consonant positioning. As a result, children often continue to read words from initial-letter cues.

Goodman (1965) reported the results of a study which demonstrated that young children could read many more words in context than in isolation. In fact, 60 percent of the words missed in isolation were correctly read in context. The availability and use of semantic and syntactic cues increased word recognition abilities.

Pearson and Studt (1975) demonstrated that poor readers were less flexible in their approach to word recognition. These readers were characterized as rigid, less willing and overly concerned with making errors.

Oral Reading Rate and Phrasing

Grouping words to make phrases contributed to an increase in oral reading rate. Hatch and Sheldon (1950) found that word by word reading was a common characteristic of both good and poor readers in the second grade and a common characteristic of only poor readers in grades 2, 3, 4, and 6 as measured by the Durrell Analysis of Reading Difficulty.

Amble and Muehl (1966) replicated an earlier study by Amble (1966) to investigate the effects of phrase training using a tachistoscopic-type presentation, to improve reading rate and comprehension. To control for intelligence, 436 randomly selected fifth grade students were assigned to one of the 3 training groups. Training groups were designated according to the amount of phrase reading practice they received.
Phrase training included tachistoscopic presentation of 2, 3, and 4 word phrases. The 5200 phrase group received daily training on 5200 phrases for 10 days. The 2600 phrase group received daily training in 2600 phrases for 5 days and remained in the regular class program for the other 5 days. The no phrase training control group remained in the regular classroom program throughout the 10 days and received no phrase training.

Amble and Muehl found that the 5200 phrase group made significant gains ($p < .02$) than both the other groups on phrasing achievement.

The 5200 phrase group made significantly greater gains ($p < .05$) in reading rate than the other two groups. These large increases in reading rate were established without loss of reading comprehension as there were no differences among groups on the comprehension subtest over the same materials. Correlation coefficients computed between phrase test scores and intelligence differences on the phrase test were related to performance on these subtests ($r$'s ranged from .43 to .69).

This study demonstrated that increased practice in phrase training significantly improved reading rate without a loss in reading comprehension.

Oral Reading Rate and Oral Reading Errors

Oral reading errors were another important factor explored for the improvement of oral reading rate. Probably the most significant shift in defining reading has been to point out that skilled reading is by no means a word perfect performance (Allington, 1979). Allington
further suggested that poor readers seemed to have their development arrested somewhere in the learning process and remained at a stage in which either the graphic cues (as in the sight word reading) or the phonic cues (as in the overanalytical reader) predominate. Frank Smith (1973) suggested that teaching methods which emphasized accuracy over meaning were the primary obstacle to moving out of these stages.

McCracken's (1961) study tested 36 second grade students with four graded paragraphs ranging from 39 to 77 words beginning with primer level up to the third reader level (Sheldon Basic Readers, 1957-58). The paragraphs were administered on an individual basis and required oral reading of each paragraph and then an oral report of what was read. Time, errors and comprehension were noted. Results of this study indicated that the kinds of oral reading errors were not discriminating and that all children make fairly similar errors. Oral reading performance not including comprehension, is a general skill or composite of the following highly correlated factors:

1) The number rather than kind of errors is more important. Good readers made 3 errors per 100 running words while poor readers made 21 errors.

2) Speed of oral reading discriminated among good, average and poor readers. At their second grade level the good readers' oral reading rate was 117 to 127, while the poor readers' rate was 45 to 49.

This study indicated the need for poor readers to both increase their reading rate and reduce the number of errors committed. At the same time, the poor reader had to learn how to cope with the fear of
failure or anxiety aroused by the high number of errors.

Haupt, Magee, Axelrod, Coben and Price (1977) explored the use of an oral reading drill focusing on recognizing ending word letters to reduce oral reading errors.

Three boys reading at below grade level, from a special classroom (IQ range 77 to 97) served as subjects. Error categories as determined by Weber (1970) included word-order reversals, additions, insertions, omissions and substitutions. Daily oral readings were observed live and audiotaped. After a six day baseline collection, a paired word drill was administered prior to the days' oral reading. The student was required to accurately read 19 or 20 pairs which were presented in a random fashion until all 19 were correct. A second baseline period was observed, without drill usage, and reading error was similar to baseline 1.

Haupt, et al, found that the drill procedure produced decreases in errors (average 9.5% to 1.8%) for all three students demonstrating that oral reading errors could be markedly decreased by a drill which required the decoding of the final consonant of a word.

Davis and Ekwall (1976) investigated the oral reading frustration of 62 third, fourth and fifth grade students with respect to the number of oral reading errors. Each child practiced 15 to 20 minutes, reading his regular textbooks and answering questions while wearing a polygraph harness for 3 to 5 days. Once the basal lines were established the Spache Diagnostic Reading Scales (Spache, 1963) was administered at the child's independent level of reading (Johnson and Kress, 1965) (1% mistakes and 90% comprehension), instructional level (5% mistakes, 75% comprehension) and frustrational level (10% mistakes, 50% compre-
hension). The Gray Oral Reading Test (Gray, 1963) was also mentioned as having a structure similar to the informal reading inventories discussed by Johnson and Kress. Each child was monitored by the polygraph while reading the Spache Diagnostic Reading Scales.

The children in this study were tested and categorized according to perception mode as restricted (rigid), mixed (normal), and expansive (flexible). This mode of perception was found to be a better predictor of frustration than IQ. The group categorized as restricted required almost twice as large a percentage of errors before the polygraph indicated frustration as compared to both of the other groups.

Davis and Ekwall (1976) found that over a wide range of intellectual ability 87% of the children in the study exhibited significant anxiety when they encountered a relatively small degree of failure (6-9% errors) in oral reading. Davis and Ekwall concluded that the implications for reading instruction were that reading passages for instructional purposes must be no more difficult than to allow 5% oral reading errors. The author's SCP allowed a higher margin for error to allow the child to cope with the willingness to accept error.

**Oral Reading Rate and Reflective-Impulsive Dimension**

The child's response pattern to error has come under recent investigation and is another factor for improving oral reading rate. Conceptual tempo, also known as the reflective-impulsivity dimension, describes the response style of the child on a standard task such as word recognition. A child who responds quickly, without carefully evaluating his choice and tends to commit many errors is said to have an impulsive conceptual tempo. A child who slowly evaluates his
solution and commits few errors is termed reflective.

Several studies have shown a significant relationship between reflective-impulsivity and reading behaviors. Kagan (1973) found that reflective first grade children made fewer word recognition errors than their impulsive counterparts. Similarly Erickson (1973) showed that the reflective-impulsivity dimension was a factor affecting the performance of kindergarten children on a word recognition task. Shapiro (1974) and Yando and Kagan, (1968) have indicated a significant relationship between reflective-impulsivity and reading readiness test performance. In these studies reflective subjects had significantly higher mean comprehension scores than impulsives.

Shapiro (1976) randomly assigned 32 impulsive first grade boys to either an experimental or a control group. The experimental students received small group instruction in visual discrimination training with an instructor for 20 minutes every morning for 20 days in a room separate from their classroom. The students in the control group received regular classroom instructions during this period. Post test scores on a reading readiness test showed a significant difference in the reduction of errors in performance of the experimental over the control students. There was also a significant \( p < .001 \) increase in following directions by the experimental students. Shapiro concluded that visual discrimination training could reduce an impulsive response style.

Jenkins, Barksdale, and Clinton (1978), studied the effects on oral reading rate on improvements in comprehension and the effects on comprehension of oral reading rate increases in one fourth grade and
two fifth grade boys, all age 11 and minority children, and two were from low income families. Daily measures of reading comprehension were obtained for the three boys in both their regular classroom and in a special remedial setting. In the remedial setting, daily measures or oral reading rates were also obtained. Reinforcement (money) interventions were scheduled in each setting separately, first for comprehension improvement and later for reading rate increases. In each setting, contingent reinforcement of comprehension produced comprehension improvements.

Both Students 1 and 2 evidenced oral reading rate increases when contingencies were placed on their performance. Student 1 increased by 26 words a minute and Student 2 increased by 27 words per minute, both improvements of 28%. When contingencies were removed, the boys showed decreases in oral reading rate of 7 to 16 words per minute. Error rates were not influenced by this contingency. Throughout the course of the study, the boys' oral reading error rates remained very low (approximately one error per minute) and varied only slightly, neither increasing nor decreasing as a function of the treatment conditions.

Jenkins, et al, found that comprehension improvements and oral reading rate improvements seemed to have little effect on each other, although each performance was affected by direct intervention.

Elgart (1978) studied three different modes of reception--oral reading, silent reading, and listening and their effects on comprehension. The relative effectiveness of each of the three modes has been examined, but has yielded conflicting results due to intersubject
variation and difference in degree of reading materials. The purpose of this study was to use a research design which eliminated those two sources of error as they affect a comparison of the three modes of reception--oral reading, silent reading, listening on comprehension. Forty-five third grade students were selected. The pupils read orally, read silently, and listened to selections taken from the Gates-MacGinitie Reading Comprehension Test-Primary C, Form 2. Results indicated that there was a significant difference between the three modes of reception with oral reading significantly more effective than silent reading in comprehending material.

Lovitt and Hansen (1976) measured oral reading rates--correct and incorrect, and correct percentage for answering comprehension questions. In this study they combined the advancement criterion of Gormly and Nittoli (1971) who described a process whereby students were allowed to advance from one reading level to another if their comprehension scores for several stories were greater than 70% and Starlin (1970) who suggested that pupils should be advanced from one reading level to another when their correct oral reading rates were above 100 words per minute (wpm) and their incorrect rates were less than 2 wpm (rate of mistakes measured by number of word errors per minute).

Lovitt and Hansen (1976) allowed seven boys, ages 8 to 12, who were one to three years retarded in reading to proceed from one section of a book to another on the basis of their comprehension scores and their oral reading rates, and allowed the students to skip several stories in their readers if, on the same day, their three scores,
oral correct rate; oral incorrect rate; and comprehension percentage were better than criterion levels.

They also incorporated a provision for students whose scores remained low. For these students, drill techniques were scheduled.

Students were allowed to skip only when their reading abilities exceeded established levels, and were provided drill only when their reading abilities were inferior to the established levels.

Three types of drill were used, one for each measured behavior; oral correct reading rate, oral incorrect reading rate, and comprehension percentage incorrect. For the correct rate drill, a student was required to read the last 100 words from the previous day's assignment. He repeated the passage until he could complete it at his criterion level.

When the incorrect rate drill was used, the teacher showed the student a list of the words he had misread during the reading session. The student was required to rehearse the list of phrases until he could read all of them correctly to the teacher.

For the comprehension drill, the student's answer sheet was returned to him/her with the incorrect responses checked. He/she was then required to rework his/her answers until they were all correct. Throughout this study, the pupils read 500 words orally each day.

The data indicated that the intervention-skipping and drilling was effective for all pupils in this study. Throughout this study, average correct and incorrect oral reading rates improved from 50.7 wpm to 62.2 wpm and 3.1 wpm to 2.7 wpm respectively. The pupils also improved in their ability to comprehend; from 65.9% to 80.2%, despite the fact that they were continually reading more difficult material.
Lovitt and Hansen were unable to determine whether skipping or drilling, or the combination or the techniques, was responsible for the gains. This writer would suggest that a lack of control for levels of difficulty may have also contributed to the improvements.

Summary

The SCP technique utilizes or modifies a combination of the following selected factors out of the many factors that a review of the literature has shown to contribute to improvement in oral reading rate. The selected factors are level of reading difficulty, word recognition, phrasing, and number of reading errors. In the SCP structured technique, the assigned task is oral reading and the major priority is placed on increasing oral reading rate. Research has demonstrated that as the reading level of difficulty increases, the reading rate decreases. SCP technique assigned the lowest level of difficulty at which the child could successfully and easily read at a pre-established rate. Research indicated that word recognition accounted for a significant amount of the variance in reading achievement. The SCP technique gave the child daily practice in rapid word recognition at a level of difficulty that matched his/her ability. The assigned oral reading task provided the child with practice in shifting from letter recognition to word recognition and vice versa which increased his/her flexibility which had been linked to improvement in reading rate. In SCP technique, the child read words in context which research found to contribute to improvement in word recognition. Studies showed that grouping words to make phrases contributed to an increase in oral reading rate without a loss in reading comprehension. The SCP technique
encourages children to group words in phrases in order to increase their reading rate. Research shows that preestablished advancement criteria for students to advance from one reading level to another was related to increases in reading rate and achievement. The SCP technique used the rate (100 wpm) suggested in the research by Starlin (1970), but allowed a higher percentage of mistakes or pre-established number of mistakes per page. These mistakes were recorded per page. It was assumed by the writer that the increase in the number of acceptable mistakes pre-established per page reduced test anxiety, increased attention, and thus increased oral reading rate. It was further assumed that recording the number of errors per page would be more specific and provide more visible and immediate feedback to the child, parents and therapist, which helped to accelerate the child's oral reading rate.

Hypothesis 4: Children (1st through 6th graders) with mild and moderate learning difficulties who receive training for 12 weeks in the self correction structured technique (including parent monitoring) will show a difference in academic achievement as indicated by their teacher assigned grades, before and after the treatment program than children with mild and moderate learning difficulties who did not receive this training.

Previously mentioned research indicates that anxiety has a lowering influence on academic achievement; attention is related to reduced anxiety and to increased academic achievement; and that oral reading rate as a component of reading is linked to improved academic achievement. Teacher assigned grades are a commonly accepted means of evaluating student achievement.
CHAPTER III
PROCEDURES

Statement of Hypotheses

The following are the four hypotheses which were investigated in this study.

Hypothesis 1:

Children (1st through 7th graders) with mild and moderate learning difficulties who received 12 weeks training in the self correction structured technique (includes parent monitoring) will exhibit a difference in test anxiety as measured by pre and post testing of the Test Anxiety Scale for Children (Sarason, et al, 1980) than comparison children with mild and moderate learning difficulties who did not receive this treatment.

Hypothesis 2:

Children (1st through 6th graders) with mild and moderate learning difficulties, who receive 12 weeks training in the self correction structure technique (includes parent monitoring) will show a difference in attention as measured by pre and post testing on a timed oral reading task than comparison children with mild and moderate learning difficulties who did not receive this treatment.
Hypothesis 3:

Children (1st through 6th graders) with mild and moderate learning difficulties who receive treatment for 12 weeks in the self correction structured technique (includes parent monitoring) will demonstrate a difference in oral reading rate as measured by the pre and post tests of the Gray Oral Reading Test (Gray, 1961) than comparison children with mild and moderate learning difficulties who did not receive this training.

Hypothesis 4:

Children (1st through 6th graders) with mild and moderate learning difficulties who receive training for 12 weeks in the self correction structured technique will show a difference in academic achievement as indicated by their teacher assigned grades before and after the treatment program than comparison children with mild and moderate learning difficulties who did not receive this training.

Population

A sample of 38 first through 6th grade students with mild and moderate learning difficulties were referred to the principal investigator by teachers and counselors from a total of 1197 first through sixth grade students in 6 of the 11 elementary schools in suburban public schools in Northeastern United States. Students who have been, are, or will be involved in the Full CORE Chapter 766 process for self contained special class placement were excluded as their needs go beyond the scope of this study. Two groups of twenty students each were formed by random
assignment. One group (Xe) was the experimental or treatment group and these 20 students and their parents received a structured technique in Self Correction Psychotherapy as described in the procedures section, for 12 weeks. (Note: Two of the treatment students dropped out; one due to medical problems, and the other due to lack of parental involvement.) The other group (Xc) of 20 students was the control or comparison group and received no treatment. All 20 students in the control group remained for the duration of the study. The distribution of students by grade and sex is noted below.

**Treatment Group**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>6</td>
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<tr>
<td>3</td>
<td>2</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</table>

**Total** = 18

**Comparison Group**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
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<td>4</td>
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<tr>
<td>5</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total** = 20
Family Therapists

Eight family therapists, who were formally trained by the author in Self Correction Psychotherapy Structured technique (SCP) provided treatment in this study. Following is a list of the therapists:

1. Female Therapist
   Education: B.A.
   M.A. - School Psychology
   Certification: Certified Secondary Teacher
   Certified School Psychologist
   Experience: Family Counselor--4 years

2. Female Therapist
   Education: B.A.
   M.Ed. School Psychology
   Certification: Certified Elementary Teacher
   Certified School Psychologist
   Experience: Family Counselor--4 years
   School Psychologist--4 years
   Elementary Teacher--2 years

3. Female Therapist
   Education: B.A.
   M.Ed.
   Doctoral Candidate
   Certification: Certified Elementary Teacher
   Experience: Elementary Teacher--5 years
   Family Counselor--1 year

4. Female Therapist
   Education: B.A.
   M.Ed. Candidate in School Psychology
   Experience: Family Counselor--4 years
   August 1980

5. Male Therapist
   Education: B.A.
   M.Ed.
   Certification: Certified Special Education Teacher
   Certified School Psychologist
   Experience: Special Education Teacher--3 years
   Family Counselor--2 years
   School Psychologist--2 years
6. Male Therapist

Education: B.A.  
           M.Ed.  
           M.S.W. candidate

Certification: Certified Elementary School Teacher  
               Elementary School Teacher--2 years  
               Family Counselor--3 years

Experience:

7. Male Therapist

Education: B.A.  
           M.A.  
           M.Ed.

Certification: Doctoral Candidate

Experience: Elementary School Teacher  
            Counselor--2 years  
            Elementary School Teacher--5 years

8. Male Therapist

Education: B.A.  
           M.A.  
           CAGS

Certification: Certified Rehabilitation Counselor

Experience: Family Counselor--2 years

Measurements

Four areas of assessment were utilized on both the pre-study and post-study measures in this study. They were as follows:


2. Attention span, measured by timed observation on an oral reading task.


4. Academic achievement, measured by marks assigned by classroom teachers.

Test Anxiety

The selected measurement of test anxiety of the elementary students in this study was by a self reporting scale developed by Sarason, Davidson, Lighthall, Waite and Ruebush (1960), and widely used by other investigators of test anxiety (Katz, Cole and Baron, 1976; McCormick and

Sarason, et al (1960), developed a 30 item self reporting scale for measuring test anxiety in elementary children, the Test Anxiety Scale for Children (TASC). They also developed a scale with 17 items similar to the TASC for teachers to rate test anxiety in elementary students, the Teacher Ratings for Anxiety (TR). Both the TASC and the TR were administered to 2211 pupils from grade 2 through grade 5, chosen from the Milford and Greenwich, Connecticut school systems. The average total correlations between scales was .20, p < .001 (see Table 2). The results showed that the students' verbal self reports of test anxiety on the TASC were significantly correlated with their teachers' rating (TR) of their test anxiety.

Sarason and his colleagues further explored the interfering and negative affects of test anxiety upon intellectual and academic performance since the effects of intelligence on achievement is significantly large (.50) the correlation of achievement or intelligence tests with test anxiety as measured by the TASC would not be expected to be large (not more than -.50). When intelligence was controlled by matching, there still were differences account for by test anxiety level. Sarason, et al, administered intelligence and achievement tests to 507 2nd through 5th grade middle class students in Greenwich, Connecticut, and 1399 2nd through 5th grade middle class students in Milford, Connecticut, and the results were correlated with the TASC and TR (see Table 3).

The upper section of Table 3 shows that the direction of the relationship is negative, indicating that as the level of test anxiety increases, the level of measured IQ and mean achievement decreases. Only


<table>
<thead>
<tr>
<th></th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greenwich</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TASC vs. mean achievement 1</td>
<td>-.002</td>
<td>-.166</td>
<td>-.141</td>
<td>-.234 *</td>
</tr>
<tr>
<td>TASC vs. IQ 2</td>
<td>-.012</td>
<td>-.119</td>
<td>-.083</td>
<td>-.179</td>
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<tr>
<td><strong>Milford</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TASC vs. mean achievement 3</td>
<td>-.186 †</td>
<td>-.249 †</td>
<td>-.270 †</td>
<td>-.294 †</td>
</tr>
<tr>
<td>TASC vs. IQ 4</td>
<td>-.196 †</td>
<td>-.214 †</td>
<td>-.275 †</td>
<td>-.284 †</td>
</tr>
<tr>
<td><strong>Greenwich</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR vs. mean achievement 1</td>
<td>-.533 †</td>
<td>-.504 †</td>
<td>-.393 †</td>
<td>-.196 *</td>
</tr>
<tr>
<td>TR vs. IQ 2</td>
<td>-.161</td>
<td>-.182 *</td>
<td>-.382 †</td>
<td>-.215 †</td>
</tr>
<tr>
<td><strong>Milford</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR vs. mean achievement 3</td>
<td>-.419 †</td>
<td>-.353 †</td>
<td>-.361 †</td>
<td>-.127 *</td>
</tr>
<tr>
<td>TR vs. IQ 4</td>
<td>-.301 †</td>
<td>-.300 †</td>
<td>-.176 †</td>
<td>-.125 *</td>
</tr>
</tbody>
</table>

* Significant at the 5% level.
† Significant at the 1% level.

1 Grades 2, 3, 4: Gates Advanced Primary Reading (administered in grade 2); grade 5: Stanford Achievement, Intermediate Battery J.
2 Grades 2 and 3: Pintner-Cunningham; grades 4 and 5: Kuhlmann-Anderson.
3 Stanford Achievement, Battery K—grade 2, Primary; grades 3 and 4, Elementary; grade 5, Intermediate.
4 Grades 2, 3, and 4: Otis Alpha; grade 5: Otis Beta.
**TABLE 2**

Correlations of TASC and TR, Class by Class, Averaged for the Various Grades in Both School Systems *

<table>
<thead>
<tr>
<th>Grade</th>
<th>No. of Classes</th>
<th>Total N</th>
<th>Average r †</th>
<th>Significance of r, p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenwich</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>142</td>
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<td>3</td>
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<tr>
<td>5</td>
<td>6</td>
<td>139</td>
<td>.27</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>All grades</td>
<td>25</td>
<td>583</td>
<td>.27</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Milford</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>469</td>
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<tr>
<td>5</td>
<td>14</td>
<td>365</td>
<td>.18</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>All grades</td>
<td>61</td>
<td>1628</td>
<td>.18</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Total both schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All grades</td>
<td>88</td>
<td>2211</td>
<td>.20</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

* From Sarason et al. (1958c).

† The average r was obtained by Fisher's method of transforming the original r for each class into z and then obtaining the weighted average value of z and reconverting to r.
the Milford schools' coefficients (average -.24) are large enough to be considered significant (p < .01). Table 2 also shows that as the grade level increases, test anxiety as measured by the TASC also increases with possible increase in the interference with intellectual functioning and achievement.

**Attention Span**

The Attention Span Assessment developed by the author was selected to measure attention span on an oral reading task. The examiner tells the child to read aloud in a basal reading book (at the appropriate grade level for the child) until he or she is told to stop. Timing started from the beginning of the oral reading and ends when oral reading stops. If the child needs and asks for help on a word, the word is immediately given to him or her. Otherwise, the timing is stopped when the child stops reading for 2 minutes. When the child stops reading or attending to the oral reading task time is recorded. The Attention Span Assessment measures the time spent attending to the oral reading task.

**Oral Reading Rate**

The Gray Oral Reading Test (Gray, 1963), was selected to measure oral reading rate. The Gray Oral Reading Test provides an objective measure of growth in oral reading from preprimer to college and adult levels.

Two of the three objective measures for this study was recorded for each passage. The time (in seconds) for reading each passage was carefully recorded. The errors made were recorded as the passage was read. Both time and total number of errors were used in the tentative norms to determine the grade equivalent in oral reading. In addition,
four comprehension questions were included in the test but were not administered for this study since the dependent variable measured was oral rate.

Coefficients of intercorrelation among grade-scores on each of the four forms at each grade level, frequently known as coefficients of equivalence were calculated. For all subjects, the range was from .973 to .982; for girls, from .977 to .981; and for boys, from .969 to .983. Thus, the reliability of each test, determined in this manner, was highly satisfactory.

The standard error of measurement offers a second estimate of the reliability of the tests. In general, errors of less than 4.00 points were expected in the total passage score for any pupil 68 percent of the time.

The fact that pupils randomly selected from "representative groups" as judged by cooperating schools obtained scores that distinguished one grade from another indicating concurrent validity.

**Academic Marks**

Teacher assigned grades or statements served as the objective assessment of class achievement by the teachers at the initial implementation of this study and at the termination of this study. The teachers of the students in this study had limited contact with the therapists, parents, and the author, in his role as school psychologist.

**Design**

A sample of 40 first through 6th grade students with mild and moderate learning difficulties were referred to the principal investigator
by teachers and counselors from a total of 1197 first through sixth grade students in 6 of the 11 elementary schools in suburban public schools in northeastern United States. Students who have been, are, or will be involved in the Full CORE Chapter 766 process for self contained special class placement were excludes as their needs go beyond the scope of this study. Two groups of twenty students each were formed. Two students dropped out of the experimental group (one due to medical reasons and the other due to lack of parental involvement). One group (Xe) was the experimental or treatment group and these 18 students and their parents received a structured technique in Self Corrective Psychotherapy as described in the procedures section for 12 weeks. Eight therapists with training and experience in the technique provided weekly, one hour sessions to the individual child and his/her parents. These therapists received weekly group and/or individual consultation with the author. The other group (Xc) of 20 students was the control or contrast group and received no treatment for 12 weeks. All 20 students in the control group remained in the program for the duration of the study.

The design configuration for this study is a before and after control group design as follows:

\[ X = \text{Treatment technique} \]

\[ \begin{align*}
Yb & \quad x & Ya & \quad \text{(Xe experimental group (18), received treatment)} \\
Yb & \quad -x & Yb & \quad \text{(Xc control or contrast group (20), received no treatment)} \\
N & = & 38
\end{align*} \]

This design was chosen because random assignment to either group controls to some extent the internal validity problems of history and maturation. The effects of measurement will be constant on both groups.
The pre and post testing in this study does not involve highly unusual procedures or reactive content, and thus should not effect the external validity of the study.

Since the students available for this study are in the regular classes or are students receiving special educational services under Chapter 766 (Self Contained Special class students were excluded), the non-equivalent control group design was used.

Pre and Post Assessment Procedures

The selected tests for this study, The Test Anxiety Scale for Children (Sarason, et al, 1960) Attention Span (by the author) and the Gray Oral Reading Test (Gray, 1963), were individually administered, scored and recorded for all 38 students in the experimental and control groups before and at the conclusion of this study by either female family therapist #4 (School Psychologist candidate) or male family therapist #7 (Doctoral Candidate). These two therapists in this study were assigned to complete the pre and post testing to maintain testing consistency. Both these therapists were experienced examiners. All tests used in this study were administered individually in familiar surroundings in either the nurses' office or the counselor's office at the students' schools. Individual scores were recorded in each student's project folder by the examining therapist. In addition, teacher assigned grades for both experimental and control groups were copied from report cards by the family therapists and entered into the students' project folder. The student project folders for this study were filed and maintained in the school psychologist's office. A more
detailed explanation of the assessment procedures follows:

Test Anxiety

The widely used Test Anxiety Scale for Children (TASC, Sarason, Davidson, Lighthall, Waite, Ruebush, 1960) was selected to measure test anxiety and was administered individually, pre and post, by either of the 2 assigned examiners to all 38 students in the experimental and control groups. The 30 questions were presented orally, one at a time, by the examiner. The student was required to answer Yes or No. The answers were recorded on an answer sheet (see Appendix A) and filed in each student's project folder.

Attention Span

The Attention Span Assessment developed by the author was selected to measure attention span and was administered individually pre and post by either of the 2 assigned examiners to all 38 students in the experimental and control groups on an oral reading task. The examiner asks the student to read aloud from a basal reading book at the child's grade level until told to stop. Timing started at the beginning of the oral reading by the student. If the student asked for help on a word, the word was immediately given to the student and timing continued. If the student hesitated on a word, as if he/she was studying the word, or maintained eye contact with the page without reading orally, then timing stopped after 2 minutes of hesitation or maintaining eye contact with the page. Otherwise, timing stopped when the student stopped reading orally and did not attend to the oral reading task or timing stopped after the student had read orally for 30 minutes. The Attention Span Assessment measured the time spent attending to an oral reading task.
Oral Reading Rate

The Gray Oral Reading (Gray, 1963) was selected to measure the oral reading rate and was administered individually, pre and post, by either of the 2 assigned examiners to all 38 students in the experimental and control groups. Form A of the Gray Oral Reading Test was used for pre testing and Form B was used for post testing. An individual paragraph at the student's grade level was presented to the student by the examiner. The student was required to read the paragraph orally. The time that the student began reading was recorded. The examiners did not tell the student to read fast or let the student become aware that he/she was being timed as this could have increased the reading rate by as much as 10%. At the end of one minute the word and the time was recorded. The student finished reading the paragraph orally. The number of words were counted within the one minute of oral reading and this was recorded in the students' project folder as the students' oral reading rate expressed in words per minute (wpm). If the time recorded for oral reading of the paragraph is less than one minute, the words per minute was figured according to the following formula. The number of words read is divided by the time expressed in seconds and the resulting answer is multiplied by 60. For example, if the student read 40 words in 30 seconds then 40 (number of words read) ÷ by 30 (time expressed in seconds) and multiplied by 60 would = 

\[
\frac{40}{30} \times 60 = 30 \times 2400 \\
80 \text{ words per minute}
\]

The oral reading rate in words per minute was recorded on the students project folder.
Teacher Assigned Grades

The grades assigned to all 38 students including both experimental and control groups were copied by the assigned examiners from report cards at the end of the 3rd and final 4th quarter marking periods and filed in the students' project folder.

Procedures and Techniques for Each of the 12 Sessions

First Session

1. Before the first session review all referral information such as previous testing (intelligence, achievement, etc.), teachers and other school specialists reports, medical reports, parent reports, etc.

2. At a table or desk beside you, seat student to your right if student is right handed, to your left if student is left handed. Ask one parent to sit beside the student and the other parent to sit beside you.

3. Establish Oral Reading Rate and Level. The student begins reading orally at grade level or at the level indicated on the school reading achievement test on the Gray Oral Reading Test Form A. Record Time and Errors. Do not test for comprehension. Record the time he/she begins oral reading and the first word. Do not let the student be aware that he/she is being timed. Do not tell the student to read fast as this often can increase the rate by as much as 10%. At the end of one minute record the time and the word. Let the student finish reading the passage. Count the number of words read in the first minute of reading. This is the student's oral reading rate
expressed in words per minute (wpm). If the time recorded for oral reading of the passage is less than one minute the words per minute is figured according to the following formula.

\[
\text{Number of words read} \times 60 \quad \text{in time expressed in seconds}
\]

Example:

The student reads 40 words in 30 seconds.

\[
\begin{align*}
40 & \quad - \quad \text{Number of words read} \\
30 & \quad - \quad \text{in time expressed in seconds}
\end{align*}
\]

\[
X60 = 30 \quad \frac{80 \text{ wpm}}{2400}
\]

Continue testing downward to easier oral reading levels until 100 words/minute is reached. This is the level at which to begin the oral reading SCP task. If the preprimer reading level is reached without attaining 100 wpm, then the preprimer level is used for a beginning oral reading level. To repeat, the oral reading level at which 100 wpm is reached becomes the starting level.

4. Review goals with parents and child:
   a. To increase oral reading rate.
   b. To increase attention.
   c. To reduce anxiety over failing and making mistakes.
   d. To improve academic marks.

5. Discuss time commitments

The individual and his/her parents are told that the following commitments are necessary for this 12 week program. The individual is required to work at an assigned oral reading task for one half hour for
each day of the week including Saturdays and Sundays (7 days/week). The individual and one parent are required to remain seated at a table or desk for a half hour (1/2) during the individual's performance of the assigned oral reading task. The parents are advised that they are not to serve as academic teachers during these twelve (12) weeks but will act only as observers or monitors of the student's performance on the assigned oral reading task.

Parents are required to take turns monitoring the student so that in one week, one parent would monitor four (4) times and in the next week would monitor three (3) times. The parents alternate their monitoring on a weekly basis to keep the work load even. The parents choose their monitoring days and time of day at their convenience. It is not necessary for a parent to monitor two or three days in a row or at the same time every day.

Child and parents will meet weekly with therapist to review records and progress and get the next assignment.

6. Preview the 12 week program.

The timetable for this program is previewed to the individual and parents by the therapist.

Weeks one through four are used for gathering baseline information, in terms of structuring the individual's and his parents' interactions with each other and with their performance on the assigned oral reading task. It appears that individuals need at least four weeks to become familiar with a routine and begin to make changes in their interactions. Some individuals may need more or less time and therefore the timetable may have to be adjusted for the individual.
At the end of the fourth or fifth week individuals begin to undergo the process of changing their interactions and in so doing may vacillate from one extreme to the other in their behavior. In other words, the individuals are in a state of internal imbalance and their behavior is an external expression of this internal imbalance, and their behavior generally gets worse before they will get better. During this crisis period individuals experience difficulties in both letting go of old ways of interacting and acquiring new ways of interacting. Internal and external influences on the individuals may help or hinder their adjustment but in any case the individuals begin to direct and correct their interactions more appropriately within a week's time.

Weeks five through eight build on the previous four weeks and provide the individual with experiences with rewards in the form of bonus time, or time off, after specific achievement levels are reached. This part of the program enables the individual to gain experience and practice with rewards.

Weeks nine through twelve are spent on beginning to shift more controls and responsibility to the individual and at the same time beginning to terminate therapy as the individual begins transferring more effective behavior patterns to daily school work.

7. Establish margin for mistakes

In SCP theory, the allowable number of reading errors per page (error count) cannot exceed 20% of the number of words on the page. In practice, however, the error count was arbitrarily set at 7 errors per page by the therapist as a guideline for helping the individual to cope with mistakes and establish an acceptable margin for mistakes.
The limits for an acceptable margin for error were given to the individual when he/she was told that he/she was allowed to make seven (7) errors for each page. This also communicated to the individual that he/she was expected to make some errors and what the acceptable limit was before he/she had to pay a penalty by repeating the page.

8. Directions for the assigned oral reading task.

The child was provided with a basal reader at the level at which he/she could read 100 words/minute or was given a preprimer level book. The following directions were stated exactly and only once by the parent at the beginning of each work session.

"Read all the words on the page. If you don't know a word, give me the letters and I'll give you the word. You are allowed 7 errors on the page before you have to repeat the page. Begin on page ____." 

For the purpose of Self Correction Psychotherapy the oral reading task was not principally used for reading instruction, but rather was a means by which the individual, as well as the parents and therapist could monitor his/her interactions and changes toward the task and others.

"Read all the words..." meant that the individual must read the title, footnotes, words on a building, picture or sign on the page! In other words, all the words on the page must be read regardless of where they were on the page. This part of the directions helped the individual to follow directions by sharpening his/her powers of observation and paying attention to detail. If the individual read all the words on the page, then he/she had followed that part of the directions appropriately. If he/she did not read all the words, then he/she had not followed directions and an error was counted for each missed word. If
the individual does not follow directions by skipping, omitting, or missing word(s), then an error is recorded next to the number of the page on which he/she is reading. If the number of errors on a page exceeds the allowed error count of seven then the individual pays a penalty by rereading the page and also learns how to cope with admitting and accepting mistakes.

The following reading errors are counted as mistakes by the monitor (parent or therapist): mispronunciations, letters left off the endings of words such as s or ed, word(s) omitted, extra word(s) inserted into sentence such as a, the, not, etc., and a word substituted for a similar word such as mom for mother, dad for father, etc. The monitor counts these errors silently or on his fingers out of view of the individual so as not to cue him/her on what particular words are wrong. When the individual finishes reading the page the monitor says only and exactly the following: State the number of errors--for example "5 errors. Go on to the next page." If the number of errors is greater than the error count of 7, then the monitor states that number of errors. For example--"12 errors. Repeat the page." The monitor then records the number of errors as described in the following section.

9. Record Keeping

The importance of keeping records is perceived as both a monitoring and feedback system. The records act as a monitoring system in that important information is recorded and in this way the individual, parents, and therapist can review, over any period of time, what has occurred on the task. Daily and weekly records can be compared. The records provide feedback to the child, parents, and therapist.
The record is kept in the following manner. The parent who is monitoring the individual in the Self Correction structured reading task is required to record his/her name, the time the task began, the time at the end of 30 minutes, the date, and the error count corresponding with each page. A single record, for one day, will look like this:

4/1/80 (date) 6:15 - 6:45 (time) Joan (mother)

<table>
<thead>
<tr>
<th>Page</th>
<th>Error Count</th>
<th>Page</th>
<th>Error Count</th>
<th>Page</th>
<th>Error Count</th>
<th>Page</th>
<th>Error Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0</td>
<td>12</td>
<td>9</td>
<td>15</td>
<td>8</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>12</td>
<td>6</td>
<td>15</td>
<td>7</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>13</td>
<td>4</td>
<td>16</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>14</td>
<td>0</td>
<td>16</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>5</td>
<td>15</td>
<td>8</td>
<td>17</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observations

Observations by the monitoring parent are recorded after the half hour of oral reading. These written observations help both the individual and parents recall what occurred during a particular session and provide feedback for all.

10. Therapist Demonstrating the SCP Technique

The therapist demonstrates the SCP technique giving the directions once only, and recording in groups of 5 until 10 pages have been read by the child.

11. Parents' practice of the technique

Each parent now practices reading the directions once and recording for 10 pages. The therapist monitors each parent as they practice monitoring the child. The therapist further advises the parents to give the directions only once to the student at the beginning of the work sessions. During the session the parent is to refrain from talking with the student or asking him comprehension questions, etc., as this
takes time away from the student, slows him/her down, and decreases his/her production. At the end of the session, if the timer or time ends in the middle of the page the individual is required to finish the page. When the time is up the book is closed and put away. Neither the parent nor the individual can use it for further reading, discussion, or re-checking. The therapist emphasizes the necessity for the parents to follow directions precisely in order to help their child to learn how to follow directions.

The therapist schedules an appointment for the following week to see the individual and both parents, and they leave to do their daily SCP technique.

Second Session

1. The therapist asks each parent to demonstrate how the SCP structured technique was practiced at home. Each parent monitors 10 pages. The therapist clarifies and points out mistakes on procedures. The therapist asks both the child and parents if what is being demonstrated is also happening the same way at home. The therapist explores and discusses the recorded observations of the parents.

2. Review the record for changes in quality (errors) and quantity of work (number of pages). An increase in quantity of pages is equivalent to an increase in reading rate. Also review record for mistakes in not following directions, such as not putting "time began," or "time ended," or not grouping by 5's etc.

3. The therapist records changes in achievement and behavior. The therapist asks each parent and child on the second and every
following session: "What changes have you noticed this week?" Their responses are recorded, and will provide feedback of what change in achievement and behavior was observed by each parent at home and on school work. The therapist is careful not to let only negative behavior be recorded and as the weeks go by the therapist encourages the parents and child, if they are not already doing so, to relate positive behavior.

4. Check oral reading rate.

If oral reading rate is 100 wpm then advance to the next higher basal reading level. If the oral reading rate is not up to 100 wpm then continue at this same level.

5. The child begins on the following page from where he/she stopped on the previous night.

Third Session

1. The therapist monitors parent demonstration as previously described.

2. The therapist reviews the records for number of errors and number of pages read.

3. The therapist records changes in achievement and behavior as previously described.

4. Check oral reading rate as previously described and maintain or advance reading level.

Fourth Session

Repeat the same four steps as described in the third session.
Fifth Session

The therapist continues steps 1, 2, 3, and 4 as previously described. The therapist gives the individual time off (bonus time) from his/her assigned SCP oral reading. Bonus time is figured in the following way. Take the largest number of pages read on a day during the week and subtract 20% from the total number of pages read that day. This will now be the number of pages that the individual is required to read. As soon as that number of pages is read at home, the individual gets the rest of the half hour off. For example, if the largest number of pages were read on Tuesday during the week and that figure was 25 pages, then 20% of 25 is 5 subtracted from 25 is 20 pages.

In this example, the individual is finished reading as soon as he completes 20 pages. If he doesn't finish 20 pages the child stops at the end of 30 minutes. If he finishes early then the amount of time off is circled.

The importance of bonus time is its relationship to reward-penalty systems and time controls. In terms of this, the individual becomes aware, through bonus time, that there is an inherent reward in working effectively. This being the acquisition of time in which to do other activities. Simultaneously, the individual becomes aware that there is an inherent penalty in not using time effectively—loss of time to do other activities. It is important to note that while there is a penalty, there is no real punishment for not completing the task. Hence, the individual works for what he/she can get out of the oral reading task in the way of reward and satisfaction.
Sixth through Eighth Sessions

The therapist follows steps 1, 2, 3, and 4 as previously described and continues to monitor bonus time.

Ninth Session

The therapist continues steps 1, 2, 3, and 4 and bonus time as previously described. The therapist begins negotiation and termination procedures in the following way.

**Negotiation**

The therapist asks the child and parents to reduce the number of days per week in which they will be doing the SCP structured technique. The therapist helps the child and parents to negotiate and come to agreement on working for one half hour for 4 or 5 days for the ninth week.

Tenth Session

The therapist continues steps 1, 2, 3, and 4 and bonus time as previously described. The therapist helps the child and parents to negotiate and come to agreement on working for 2 or 3 days for the tenth week.

Eleventh Session

The therapist continues steps 1, 2, 3, and 4 and bonus time as previously described. The 2 or 3 days negotiated in the tenth week are continued for this week. The therapist discusses termination for the following week with child and parents.

Twelfth Session

Administer the following post tests:

2. Timed observation of attention on an oral reading task (observational technique used by the author).

3. **Gray Oral Reading Test** (Gray, 1963) alternate Form B.

Changes in teachers assigned grades are discussed with child and parents.

Review the goals and accomplishments of the program with the child and parents.
CHAPTER IV
RESULTS

This study is an introductory assessment of the impact of a short term psychotherapeutic technique entitled Self Correction Psychotherapy (SCP) on test anxiety, attention span, oral reading rate and student grades using a pre and post design. The SCP technique consisted of an assigned oral reading task administered weekly by eight trained therapists to 18 students in grades 1-6 utilizing their parents as monitors. These students were referred by their teachers for problems of high anxiety, short attention spans, slow oral reading rates, and low academic achievement. The treatment group was compared to a non-treatment group through pre and post tests. Changes were measured in attention span, test anxiety, oral reading rate, and grades. The SCP treatment period extended from March to June in one school year. The SCP technique provided these individual elementary students with specific procedures in following directions and coping with mistakes in order to improve their attention span, oral reading rate and grades, and to lessen their anxiety. SCP sessions were held weekly in the student's home.

The 40 students referred by their teachers for treatment were assigned by random selection procedures to one group of 20 who would receive the SCP treatment or to another group of 20 who would receive no treatment.
During this time period two students of the 20 students receiving SCP treatment (experimental) dropped out of the program. One student developed a medical problem and had to be dropped from the program. The other student was dropped due to parent refusal to continue monitoring and completing of practice sessions. This left 18 students who continued to receive treatment for 12 weeks. All of the 20 children in the group who received no treatment (control) remained in this study for the 12 weeks.

The eight therapists received supervision from the author at weekly staff meetings and at least one tape of a randomly selected session was made by each therapist to ensure that the SCP procedures were being followed and that accurate data was being collected. The tapes were played and discussed at the weekly staff meetings. All the therapists had received 15 weeks of training in the SCP technique prior to the start of this study.

The results of the analysis of the data which was processed by electronic calculator for the four hypotheses under consideration in this study will not be presented individually. These results and implications will be discussed in the next chapter.

Analysis of Test Anxiety Data

Hypothesis 1: Children (1st through 6th grade) with mild and moderate learning difficulties who receive 12 weeks training in the Self Correction structured technique (includes parent monitoring) will exhibit a difference in test anxiety as measured by pre and post testing by the Test Anxiety Scale for Children (Sarason, et al 1960) than comparison children with mild and moderate learning difficulties who did not receive this treatment.
In the analysis of pre and post test scores for test anxiety, as measured by the **Test Anxiety Scale for Children** (Sarason, 1960), means and correlated t-tests were calculated and are presented in Table 3.

The mean of the pre scores for the control group (N=12.60) and the mean of the post scores for the control group (N=13.45) suggested an increase in test anxiety for the control students. The mean of the pre scores for the experimental group (N=14.11) and that of the post scores (N=10.11) indicated a significant difference (t=5.33, p < .01) between the experimental and the control students in the reduction of test anxiety utilizing the Self Correction structured technique.

To evaluate the significance of the difference between the mean changes of the experimental and control students an independent t-test of post minus pre test anxiety scores was performed. To conduct this independent t-test, change scores were derived as follows: Individual pre scores were subtracted from post scores which resulted in positive or negative change scores. Independent t-values were then calculated and the results are presented in Table 4. These results indicated that the Self Correction structured technique appeared to be instrumental in the reduction of test anxiety (t=3.96, p < .01) for the experimental group.
<table>
<thead>
<tr>
<th>Correlated t Value</th>
<th>Control Pre Scores</th>
<th>Control Post Scores</th>
<th>Experimental Pre Scores</th>
<th>Experimental Post Scores</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD(^b)</td>
<td>N(^c)</td>
<td>Mean</td>
<td>SD(^b)</td>
<td>N(^c)</td>
</tr>
<tr>
<td>t = .91</td>
<td>12.60</td>
<td>5.73</td>
<td>20</td>
<td>13.45</td>
<td>5.39</td>
<td>20</td>
</tr>
<tr>
<td>t = 5.33</td>
<td></td>
<td></td>
<td></td>
<td>14.11</td>
<td>5.04</td>
<td>18</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores
TABLE 4

Independent t Test\(^d\) of the Significance of the Differences between Pre-Post Changes of Experimental Students and Pre-Post Changes of Control Students in Test Anxiety

<table>
<thead>
<tr>
<th>Independent t Value</th>
<th>Experimental Pre-Post Change</th>
<th>Control Pre-Post Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD(^b)</td>
<td>N(^c)</td>
<td>Mean</td>
</tr>
<tr>
<td>-4.00</td>
<td>3.25</td>
<td>18</td>
<td></td>
<td>1.06</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores

\(^d\)Two students were dropped by random selection procedures from the control group in order to have an equal number of students for comparison in the control and experimental group.
Analysis of Variance

An analysis of variance of pre and post trial means with different treatments (Experimental and Control) as described by Edwards (1972) was performed for test anxiety and the results are shown in Table 5.

The analysis of variance for test anxiety indicated that the interaction of the between groups by pre vs. post variable was significant (F=15.65, p .01).

Description of Pre and Post Scores for Test Anxiety by Grade Level and Sex

Pre and post scores for test anxiety by grade level and sex are shown in Table 6. There appeared to be differences between the decrease in the test anxiety scores of the experimental and control groups at all grade levels for both boys and girls. This trend was not necessarily a true test of the impact of the Self Correction technique in the reduction of anxiety because of the limited number of students in this study.

Analysis of Attention Span Data

Hypotetehsis 2: Children (1st through 6th graders) with mild and moderate learning difficulties who receive 12 weeks training in the Self Correction structured technique (includes parent monitoring) will show a difference in attention span as measured by pre and post testing on a timed oral reading task than comparison children with mild and moderate learning difficulties who did not receive treatment.
### TABLE 5

Analysis of Variance of Pre and Post-Trial Means with Different Treatment (Experimental and Control)\(^a\) for Test Anxiety

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Between Experimental and Control Groups</td>
<td>1</td>
<td>15.82</td>
<td>15.82</td>
<td>1</td>
<td>n.s.</td>
</tr>
<tr>
<td>2. Within group</td>
<td>36</td>
<td>1,759.03</td>
<td>48.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>II. Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Pre vs. post of all Experimental and Control</td>
<td>1</td>
<td>39.80</td>
<td>39.80</td>
<td>5.59</td>
<td>.05</td>
</tr>
<tr>
<td>2. Groups by pre-post interactions</td>
<td>1</td>
<td>111.42</td>
<td>111.42</td>
<td>15.65</td>
<td>.01</td>
</tr>
<tr>
<td>3. Error term (correlated)</td>
<td>36</td>
<td>256.29</td>
<td>7.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>75</td>
<td>2,182.36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>1st Grade</th>
<th>2nd Grade</th>
<th>3rd Grade</th>
<th>4th Grade</th>
<th>5th Grade</th>
<th>6th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>PRE</td>
<td>POST</td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td>EXPERIMENTAL</td>
<td></td>
<td></td>
<td>CONTROL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Girl</td>
<td>18</td>
<td>12</td>
<td>1. Boy</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>2. Boy</td>
<td>13</td>
<td>9</td>
<td>2. Girl</td>
<td>13</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2nd Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Girl</td>
<td>12</td>
<td>10</td>
<td>3. Boy</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>7. Boy</td>
<td>18</td>
<td>12</td>
<td>5. Boy</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3rd Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Boy</td>
<td>17</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Boy</td>
<td>14</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Boy</td>
<td>21</td>
<td>12</td>
<td>17. Girl</td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>18. Boy</td>
<td>11</td>
<td>5</td>
<td>18. Girl</td>
<td>17</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19. Boy</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Boy</td>
<td>12</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The student was asked to read aloud in a basal reading book at his/her grade level until told to stop. Timing started from the beginning of the oral reading and ended when the child stopped reading or was stopped at the end of 30 minutes by the examiner. The same procedure was used for pre and post testing. The students attention span on a timed oral reading task was measured by this procedure. It should be pointed out that the individuals attention span was measured on an oral reading task and this may contribute to the high correlation between the improvements in attention span and oral reading rate in this study.

The mean of the pre scores for the control group (M=14.25 minutes) and the mean of the post scores for the control group (M=12.65 minutes) suggested a decrease in attention span for the control students. The mean for the pre scores for the experimental group (M=16.50 minutes) and that of the post scores (M=23.00 minutes) indicated a significant difference (t=5.12, p<.01) between the experimental and the control students in the increase of attention span utilizing the Self Correction structured technique.

To evaluate the significance of the difference between the mean changes of the experimental and control students an independent t-test of post minus pre test attention span scores was performed. To conduct this independent t-test, change scores were derived as follows: Individual pre scores were subtracted from post scores which resulted in positive or negative change scores. Independent t-values were then calculated and the results are presented in Table 7.
TABLE 8
Correlated t Tests\(^a\) of the Significance of Differences Between Pre and Post Attention Span Mean Scores; Means (in minutes) and Standard Deviations

<table>
<thead>
<tr>
<th>Correlated t Value</th>
<th>Control Pre Scores</th>
<th>Control Post scores</th>
<th>Experimental Pre Scores</th>
<th>Experimental Post scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean in minutes</td>
<td>SD(^b)</td>
<td>N(^c)</td>
<td>Mean in minutes</td>
</tr>
<tr>
<td>t = .80</td>
<td>14.25</td>
<td>10.11</td>
<td>20</td>
<td>12.65</td>
</tr>
<tr>
<td>t = 5.12</td>
<td>16.50</td>
<td>9.92</td>
<td>18</td>
<td>23.00</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores
The results shown in Table 8 indicated that the Self Correction structured technique appeared to contribute to the improvement in attention span \((t=3.05, p < .01)\) for the experimental group.

**Analysis of Variance**

An analysis of variance of pre and post trial means with different treatments (Experimental and Control) as described by Edwards (1972) was performed for attention span and the results are shown in Table 9.

The analysis of variance for attention span indicated that the interactions of the between groups by pre vs. post variable was significant \((F=10.96, p < .01)\).

**Description of Pre and Post Scores for Attention Span by Grade Level and Sex**

Pre and post scores for attention span by grade level and sex are shown in Table 10. There appeared to be differences between the increase in the attention span scores of the experimental and the control groups at all grade levels for both boys and girls. This trend was not necessarily a true test of the impact of the Self Correction technique in the improvement of attention span because of the limited number of students in this study.
TABLE 8

Independent t Test\(^a\) of the Significance of the Difference Between Pre-Post Changes of Experimental Students and Pre Post Changes of Control Students on Attention Span

<table>
<thead>
<tr>
<th>Independent t Value</th>
<th>Experimental Pre-Post Change</th>
<th>Control Pre-Post Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD^b) N(^c)</td>
<td>Mean (SD^b) N(^c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(t = 3.05)</td>
<td>6.50 5.44 18</td>
<td>1.33 9.45 18(^d)</td>
<td>17(^e)</td>
<td>.01</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores

\(^d\)Two students were dropped by random selection procedures from the control group in order to have an equal number of students for comparison in the control and experimental groups.

\(^e\)The df was halved because the variances of the two groups were significantly different.
<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Between subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Between Experimental and Control</td>
<td>1</td>
<td>752.02</td>
<td>752.02</td>
<td>5.22</td>
<td>.05</td>
</tr>
<tr>
<td>2. Within group</td>
<td>36</td>
<td>5,186.15</td>
<td>144.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. Within subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Pre vs. post of all Experimental and</td>
<td>1</td>
<td>95.07</td>
<td>95.07</td>
<td>3.35</td>
<td>n.s.</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Groups by pre-post interactions</td>
<td>1</td>
<td>310.78</td>
<td>310.78</td>
<td>10.96</td>
<td>.01</td>
</tr>
<tr>
<td>3. Error term (correlated)</td>
<td>36</td>
<td>1,020.65</td>
<td>28.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>7,364.67</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>PRE</th>
<th>POST</th>
<th>STUDENTS</th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Grade</td>
<td></td>
<td></td>
<td>1st Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Girl</td>
<td>2</td>
<td>2</td>
<td>1. Boy</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2. Boy</td>
<td>10</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Boy</td>
<td>12</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Grade</td>
<td></td>
<td></td>
<td>2nd Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Girl</td>
<td>15</td>
<td>30</td>
<td>2. Girl</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>7. Boy</td>
<td>20</td>
<td>30</td>
<td>5. Boy</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>3rd Grade</td>
<td></td>
<td></td>
<td>3rd Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Boy</td>
<td>5</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th Grade</td>
<td></td>
<td></td>
<td>4th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Boy</td>
<td>5</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Boy</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Grade</td>
<td></td>
<td></td>
<td>5th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Boy</td>
<td>30</td>
<td>30</td>
<td>17. Girl</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>18. Boy</td>
<td>6</td>
<td>15</td>
<td>18. Girl</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>19. Boy</td>
<td>7</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th Grade</td>
<td></td>
<td></td>
<td>6th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Boy</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of Oral Reading Rate Data

Hypothesis 3: Children (1st through 6th graders) with mild and moderate learning difficulties who receive treatment for 12 weeks in the Self Correction structured technique (includes parent monitoring) will demonstrate a difference in oral reading rate as measured by the pre and post tests of the Gray Oral Reading Test than children with mild and moderate learning difficulties who did not receive this training.

In the analysis of pre and post test scores for oral reading rate, as measured by the Gray Oral Reading Test (Gray, 1963) means and correlated t-tests were calculated and are presented in Table

The mean of the pre scores for the control group (M=98.20 words per minute) and the mean of the post scores for the control group (M=105.05 words per minute) suggested a significant increase in oral reading rate for the control group (p < .05). The mean of the pre scores of the experimental group (M=87.50 words per minute) which was lower than the mean of the pre scores of the control group, and the mean of the post scores of the experimental group (M=129.39 words per minute) indicated a significant difference (t=6.89, p < .01) between the experimental and control students in the increase in oral reading rate utilizing the Self Correction structured technique.

To evaluate the significance of the difference between the mean changes of the experimental and control students an independent t-test of post minus pre test oral reading rate scores was performed. To conduct this independent t-test, change scores were derived as follows: Individual pre scores were subtracted from post scores which resulted in positive or negative change scores. Independent t-values were then
calculated and the results are presented in Table 11.

The results shown in Table 11 indicated that the Self Correction structured technique appeared to be related to the increase in oral reading rate \((t=5.11, \ p < .01)\) for the experimental group.

**Analysis of Variance**

An analysis of variance of pre and post test means with different treatments (Experimental and Control) as described by Edwards (1972) was performed for oral reading rate and the results are shown in Table 12.

The analysis of variance for oral reading rate indicated that the interaction of the between groups by pre vs. post variable was significant \((F=27.98, \ p < .01)\).

**Description of Pre and Post Scores for Oral Reading Rate by Grade Level and Sex**

Pre and post scores for oral reading rate by grade level and sex are shown in Table 13. There appeared to be differences between the increase in the oral reading rate scores of the experimental and control groups at all grade levels for both boys and girls. This trend was not necessarily a true test of the impact of the Self Correction technique in the improvement of oral reading rate because of the limited number of students in the study.
### TABLE 11

Independent t Test\(^a\) of the Significance of the Differences Between Pre-Post Changes of Experimental Students and Pre-Post Changes of Control Students for Oral Reading Rate

<table>
<thead>
<tr>
<th>Independent t Value</th>
<th>Experimental Pre-Post Change</th>
<th>Control Pre-Post Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD(^b)</td>
<td>N(^c)</td>
<td>Mean</td>
</tr>
<tr>
<td>t = 5.11</td>
<td>41.89</td>
<td>25.63</td>
<td>18</td>
<td>6.22</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores

\(^d\)Two students were dropped by random selection procedures from the control group in order to have an equal number of students for comparison in the control and experimental groups.

\(^e\)The df was halved because the variances of the two groups were significantly different.
TABLE 12

Independent t Test\(^a\) of the Significance of the Differences Between Pre-Post Changes of Experimental Students and Pre-Post Changes of Control Students for Oral Reading Rate

<table>
<thead>
<tr>
<th>Independent t Value</th>
<th>Experimental Pre-Post Change</th>
<th>Control Pre-Post Change</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD(^b)</td>
<td>N(^c)</td>
<td>Mean</td>
</tr>
<tr>
<td>t = 5.11</td>
<td>41.89</td>
<td>25.63</td>
<td>18</td>
<td>6.22</td>
</tr>
</tbody>
</table>

\(^a\)Edwards (1972)

\(^b\)SD = Standard Deviation

\(^c\)N = Number of Scores

\(^d\)Two students were dropped by random selection procedures from the control group in order to have an equal number of students for comparison in the control and experimental groups.

\(^e\)The df was halved because the variances of the two groups were significantly different.
<table>
<thead>
<tr>
<th>I. Between subjects</th>
<th>(37)</th>
<th>(97,924.91)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Between Experimental and Control group</td>
<td>1</td>
<td>881.15</td>
</tr>
<tr>
<td>2. Within group</td>
<td>36</td>
<td>97,043.76</td>
</tr>
<tr>
<td>II. Within subjects</td>
<td>(38)</td>
<td>(23,742.50)</td>
</tr>
<tr>
<td>1. Pre vs. post of all Experimental and Control group</td>
<td>1</td>
<td>10,445.80</td>
</tr>
<tr>
<td>2. Groups by pre-post interactions</td>
<td></td>
<td>5,815.53</td>
</tr>
<tr>
<td>3. Error term (correlated)</td>
<td>36</td>
<td>7,481.17</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>121,667.41</td>
</tr>
</tbody>
</table>

Analysis of Grade Changes in Reading, Spelling, Language and Mathematics

Hypothesis 4: Children (1st through 6th graders) with mild and moderate learning difficulties who receive training for 12 weeks in the Self Correction structured technique (including parent monitoring) will show a difference in academic achievement as indicated by their teacher assigned grades, before and after the treatment program than children with mild and moderate learning difficulties who did not receive this training.

Teacher assigned grades for reading, spelling, language and mathematics were recorded from the report cards of the experimental and control group students in this study, and filed in their project files. The marking systems used by the teachers varied according to school and grade levels. Nineteen students were ranked according to the following grade level marking system: A, A-, B+, B, B-, C+, C, C-, D+, D, D-, and F. Eighteen students were graded with their system of E, VG, G and S. One student's grades were graded by an E, G, and S marking system. This study has stated in the above hypothesis that the grade changes were not within the magnitude of the grade changes in the experimental and control groups. However, an analysis of the magnitude of the grade changes indicated that there were fourteen 1/2 grade increases, and nine whole grade increases. There were eleven 1/2 grade decreases and 5 whole grade decreases.

Grade change data consisted essentially of increases, decreases, or non-changes (nominal scale data). A visual inspection of the grade changes shown in Table 14 revealed very few changes. In order to determine whether the experimental subjects differed significantly from the control subjects in regard to such changes, the binomial sign test
<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Experimental Students</th>
<th>Control Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Girl</td>
<td>69</td>
<td>51</td>
</tr>
<tr>
<td>2. Boy</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>3. Boy</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>2nd Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Girl</td>
<td>141</td>
<td>120</td>
</tr>
<tr>
<td>5. Girl</td>
<td>90</td>
<td>86</td>
</tr>
<tr>
<td>6. Boy</td>
<td>120</td>
<td>160</td>
</tr>
<tr>
<td>7. Boy</td>
<td>120</td>
<td>65</td>
</tr>
<tr>
<td>8. Boy</td>
<td>90</td>
<td>160</td>
</tr>
<tr>
<td>9. Boy</td>
<td>61</td>
<td>141</td>
</tr>
<tr>
<td>3rd Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Girl</td>
<td>100</td>
<td>89</td>
</tr>
<tr>
<td>11. Boy</td>
<td>107</td>
<td>93</td>
</tr>
<tr>
<td>12. Boy</td>
<td>129</td>
<td>166</td>
</tr>
<tr>
<td>13. Boy</td>
<td>102</td>
<td>86</td>
</tr>
<tr>
<td>4th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Boy</td>
<td>84</td>
<td>136</td>
</tr>
<tr>
<td>15. Boy</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>16. Boy</td>
<td>102</td>
<td>60</td>
</tr>
<tr>
<td>5th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Boy</td>
<td>62</td>
<td>92</td>
</tr>
<tr>
<td>18. Boy</td>
<td>102</td>
<td>108</td>
</tr>
<tr>
<td>6th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Boy</td>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>
was appropriate (Siegel, 1955). It resulted in a statement of the probability that the experimental versus control difference is attributable to change factors. In the binomial sign test grade changes were indicated by + for an increase and - for a decrease. The pluses and minuses were tabulated. The smaller number of pluses or minuses was used as a value for x. The pluses and minuses were then added together to establish a value for N. The N and x values were then looked up in a table of 2-way probability. A p of .05 or less would be considered significant. For example, in the case of the Reading grades there were 7 increases = 6+, and 1 decrease = 1-. Then X=1 and N=6+1=7. Seven and 1 was then looked up in the 2-way table of probability and p=.062 which was close to .05 but not significant. Grade Change Analysis is shown in the following table.
<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Experimental</th>
<th>Control</th>
<th>Increase</th>
<th>Decrease</th>
<th>No change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>X</td>
<td></td>
<td>6</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Reading</td>
<td>X</td>
<td></td>
<td>6</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Spelling</td>
<td>X</td>
<td></td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Spelling</td>
<td>X</td>
<td></td>
<td>2</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Language</td>
<td>X</td>
<td></td>
<td>0</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Language</td>
<td>X</td>
<td></td>
<td>2</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td></td>
<td>0</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td></td>
<td>7</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>
Not one of the above grade change differences was statistically significant.

The analysis of the data in Table 15 indicated that the Self Correction structured technique did not appear to be related to any significant differences in the increases in grades between the experimental group and the control group in this study.

Further Description of Data on Grades

Further description and discussion of the differences in student grades in terms of individual grades, sex, grade levels, mental ability, therapist caseloads, and teacher grading system is as follows:

Individual Grades:

Inspection of all the individual grades revealed no large increases or decreases in grades in either the experimental or control group except for one 2nd grade boy in the control group whose grades changed from D to A in both reading and language. The number of control group grade changes (17) was almost double that of the experimental group (9) due to the relatively large number of grade improvements (7) in mathematics. There were 14 one half grade increases and 11 whole grade increases, and there were eleven (11) 1/2 grade decreases and five whole grade decreases. A comparison of the pre and post grades of both the experimental and control group regardless of whether the initial grades were high, low or average showed that relatively little movement occurred. In other words, the student grades tended to remain at the same level for both treatment and comparison groups.
Reading Grade Difference by Sex and Grade Level (see Table 16)

Sex: More boys (4) than girls (2) in the experimental group showed gains in reading grades as follows: 1st grade boy from C to B; two 2nd grade boys from C to B and from C to C+; and a 3rd grade boy from C to B. All 4 of these boys recorded significantly lower anxiety and significantly higher gains in oral reading rate. Furthermore, all 4 boys had gains in attention span, 3 of them significant. The two girls (both second graders) recorded a significant reduction in anxiety and attention span and both showed 1/2 grade or better improvements on both reading and spelling grades. Because there were only 18 students in the experimental group and most were boys, the trend for boys showing better reading improvement is inconclusive.

Grade Level: Comparing the total number of students at each grade level and the number of students who showed reading gains at each grade level in the treatment group, it was the 2nd graders who demonstrated the most gains in oral reading rate, attention span and anxiety reduction as well as the most gains in reading grades. Additional gains in spelling were also recorded. Approximately 2/3 or 66% of the 2nd graders in the experimental group experienced gains in oral reading rate, attention span anxiety reduction and improvement grades. This is the most improvement recorded at any grade level for both experimental or control groups. This suggests that the SCP technique appeared to be related to a reduction in anxiety and also seemed to be related to the improvements in attention span and oral reading
<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>1st Grade</th>
<th>2nd Grade</th>
<th>3rd Grade</th>
<th>4th Grade</th>
<th>5th Grade</th>
<th>6th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>PRE</td>
<td>POST</td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td>2. Boy</td>
<td>C</td>
<td>B</td>
<td>2. Girl</td>
<td>E</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>5. Girl</td>
<td>C</td>
<td>C</td>
<td>5. Boy</td>
<td>C</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>8. Boy</td>
<td>C</td>
<td>C</td>
<td>8. Boy</td>
<td>C</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>17. Boy</td>
<td>F</td>
<td>F</td>
<td>17. Girl</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>18. Boy</td>
<td>C</td>
<td>C</td>
<td>18. Girl</td>
<td>B</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>20. Boy</td>
<td>C</td>
<td>C</td>
<td>20. Boy</td>
<td>C</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>
rate. One may speculate that over a longer length of time that perhaps the improvements in attention span and oral reading rate may be applied to school achievement.

A slightly higher percentage of girls (2 out of 5) in the experimental group earned higher grades compared to girls (2 out of 6) in the control group.

A careful inspection and review of the increases in reading grades for the control group indicated that 50% of the increases in reading grades were made by 2nd grade students. Four control students made grade increases in not only one but 2 subject areas. Two of these four control students were girls who showed grade increases in both reading and math. Of the 2 boys, one boy made grade increases in reading and math and the other boy made grade increases in both reading and language. Only one 3rd grade boy who showed significant improvement in oral reading rate, attention span and a significant reduction of anxiety, also showed an improvement in both reading grade (C to B) and math grade (D to C). The only 4th grade girl in this study showed improvement in oral reading rate and earned higher grades in both reading (C+ to B-) and in math (C+ to B-). Her attention span decreased.

An examination of the increases in reading grades of both experimental and control groups in this study indicated that more reading grade increases occurred with 2nd grade students. However, this trend should be considered inconclusive due to the limited number of students in this study and the non-significant results in reading grade improvement for this study.
The recorded impact of the SCP technique on improvement in reading grades only at the 2nd grade level may be due to one or more of the following:

1. More emphasis on oral reading at the lower grade levels than at upper grade levels;
2. The similarity and emphasis on decoding skills in both the SCP technique and reading instruction in the lower grades;
3. Less initial anxiety over reading;
4. The reading skills and material required at the 2nd grade are not as complex as those at higher grade levels and therefore the student's anxiety toward reading may be either less or may be more receptive to reduction.

**Spelling grades (see Table 17)**

In the experimental group, 2 of the 3 increases in spelling grades were recorded by 2nd grade girls with increases from C to B and D- to D+. In the control group the 2 increases in spelling grades were evenly split between one 5th grade girl who improved from a B+ to an A- and a 2nd grade boy who moved from a C to a B. This 5th grade girl in the control group showed a marked improvement in oral reading rate (108 to 126 words per minute). Both these students in the control group showed little or no gain in attention span or reduction in anxiety. No other trends were indicated.

**Language grades (see Table 18)**

Neither boys or girls in the experimental group showed gains in
<table>
<thead>
<tr>
<th></th>
<th>STUDENTS</th>
<th>PRE</th>
<th>POST</th>
<th>STUDENTS</th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Grade</td>
<td>1st Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Girl</td>
<td>F</td>
<td>F</td>
<td>1. Boy</td>
<td>B</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>2. Boy</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Boy</td>
<td>F</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Grade</td>
<td>2nd Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Girl</td>
<td>D-</td>
<td>D</td>
<td>3. Boy</td>
<td>C+</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>7. Boy</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Boy</td>
<td>D</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Boy</td>
<td>C</td>
<td>D</td>
<td></td>
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language grades. In the control group, the 2 increases in language grades were received by two boys; one by a 2nd grade boy who made a dramatic gain from a D to an A and the other gain by a 3rd grade boy who improved from a B- to a B. No other patterns emerged.

**Math grades** (see Table 19)

None of the girls or boys in the experimental group showed improvement in math grades. The control group recorded 7 increases in math grades. Boys in the control group accounted for 5 of the 7 increases in math grades. All of their gains were 1/2 grade increases. No other discernable patterns were noted.

**Intelligence.** None of the students in this study were retarded or gifted. The students were in the average to above average range of intelligence. No patterns were evident concerning the influence of intelligence on attention span, oral reading rate, anxiety of grades.

**Therapists.** There were no noticeable differences in the experimental students outcome that seemed to be related to the family therapists education, experience, sex or therapeutic orientation. All eight family therapists (4 female, 4 male) were employed as part-time family therapists in a public school family therapy program. All of the eight family therapists provided therapy for cases other than the SCP students in this study. There was a wide range of education. Seven of the 8 family therapists had masters degrees. One female therapist was completing her masters in school psychology; another male family therapist was a Masters in social work candidate; and one male and one female family therapist were doctoral candidates. Classroom teaching
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experience ranged from 2 to 5 years. Two of the family therapists (1 male, 1 female) had no classroom experience. Family counseling experience ranged from beginning first year therapists to therapists who had worked in the program for 4 years. The family therapists had a variety of therapeutic orientations such as behavioral, directive, non-directive, reality, and Gestalt.

Anecdotal Comments

A routine question was asked of the parents and child by the therapist every week. The question was: "What changes have you seen this week?" The therapist asked each parent and child and recorded their answer on an AB chart (see Appendix A). The therapist would rotate the order of the person asked so that the same person did not always respond first. In this way both parents and child shared the responsibility for initiating feedback and not merely repeating or paraphrasing the responses of the person who answered first. The answers given individually by the mother, father and child provided a feedback mechanism for both parents, child and therapist.

The number of parents who reported observable improvements in achievement and behavior in their child in specific areas is as follows: following directions (18); paying attention (18); bringing home better school papers (15); assuming and completing household chores, such as, washing dishes, emptying trash, etc. (14); self connecting behavior, such as, changing bed clothes, socks, etc., or changing mistakes on homework or picking up things, i.e., toys, dishes, clothes, without being told or reminded (12); admitting mistakes, i.e., not
making excuses or lying (12); interactions with parents, brothers, sisters and playmates, i.e., less fighting, name calling, arguing (11); initiating activity such as beginning homework or other chores without being prompted (10); completing school papers (10); and doing things without being reminded many times (10). A random selection of their specific recorded responses were:

"... is beginning to show a marked improvement in behavior... more focused..."

"... less anxious about homework."

"now completing homework and classroom papers."

"Completing papers on time which allows time for fun activities with playmates in the neighborhood."

"More organized."

"Does not work and rework papers, more satisfied with initial paper."

"Gets along better with kids in the neighborhood."

"Will now try to ride bike and is learning how to ride bike."

"Picks up his toys and room when told once, sometimes without being told."

"Gets along better with brothers and sisters."

"Doesn't worry as much about making mistakes."

"Now admits a mistake."

"Doesn't lie or withhold as much as before."

"More cooperative."
Anecdotal Comments made by Students

The number of students who reported the following observable improvements in their achievement and behavior are as follows: Following directions (18); paying attention (17); completing household chores, such as, washing dishes, emptying rubbish, etc. (12); self correcting behavior such as changing mistakes on homework or picking up things, i.e., toys, clothes, dishes, without being told, or reminded (10); admitting mistakes, i.e., not making excuses or being argumentative (10); interactions with parents, brothers and sisters, i.e., yelling, fighting, teasing (10), and initiating activity such as beginning homework or other chores without being prompted (10). A random selection of their specific recorded responses were:

"My father or mother don't yell at me as much."

"I pick up my clothes. . ." 

"I get to the bus on time."

"I empty the rubbish after being told once."

"I'm doing more things around the house."

"I'm reading more by myself."

"I will read now instead of watching TV."

"The kids like me better."

"We (brother or sister) don't fight anymore."

"I now do my homework."

"I finish all my homework."

"I'm reading better at school."
Summary of Findings

Eighteen of 38 elementary students in grades 1-6 who were referred by their teachers for help for short attention spans, slow oral reading rates, high anxiety and low grades and who were randomly assigned as an experimental group, received 12 weeks of treatment with the Self Correction Psychotherapy (SCP) technique. The other 20 students were assigned by random selection procedures to a comparison (control) group and received no treatment at that time. Parents assisted their child as monitors and sources of feedback at weekly meetings with a therapist in their home. Within 12 weeks the treatment group showed significant differences (p < .01) in improvements in attention span, oral reading rate, and in a reduction of test anxiety when compared to the control group. Although some increases were seen in reading grades among both control and experimental students, the grade changes in reading, spelling, language and mathematics were not significant. The findings of this study supported 3 of the 4 hypotheses investigated.
CHAPTER V
DISCUSSION AND RECOMMENDATIONS

The purpose of this study was to determine whether elementary
children (Grades K-6) with moderate learning difficulties who received
12 weeks of training in a Self Correction structured technique
(including parent monitoring) would exhibit less test anxiety (Test
Anxiety Scale for Children, TASC, Sarason, et al, 1960); and show
improvement in attention span, oral reading rate and improvement in
school grades. Measures would be taken by pre and post testing
and comparisons would be made with similar children who had not
received the treatment.

Means were calculated using the pre and post assessment data.
An analysis of variance was conducted and due to the significant inter-
action between the control and experimental groups and the pre and
post testing variability, t-tests were performed to identify particular
mean differences and their statistical significance. (Correlated
t-tests for the experimental group as well as for the control group
were done and an additional independent t-test of pre-post differences
was done to evaluate the significance of the difference between the
mean changes of the experimental and the control students.) Two-
tailed tests at the .01 level of confidence were used to measure the
students' improvement in attention span, reading rate, school grades
and in the reduction of test anxiety.
The results of this study indicated significant differences (p < .01) in the improvement in attention span and oral reading rate, and in the reduction of test anxiety between the experimental group of students who received the SCP structured technique and the control group who received no treatment. No significant differences were noted in grades for students in either the experimental or control group in this study. Therefore, 3 of the 4 hypotheses were supported. Further analysis of the results with respect to differences, if any, in individual grades, sex, grade levels, mental ability, therapist experience and caseloads and teacher grade systems were presented. Limitations of the study will be described. Implications of this study will be discussed in the following three areas: SCP Theory, recommendations for changes in procedures and practice, and future research.

Summary of Results

A summary of the results of the statistical analyses will be presented by each hypothesis:

Hypothesis 1: Anxiety reduction

The results of this study are in accord with Johnson and Hamill (1971) findings that test anxiety has an inhibiting effect on reading rate and that students have difficulty demonstrating their proficiency in reading because of high or even moderate amounts of test anxiety. A reduction in anxiety appeared to correlate with oral reading rate improvement. This study is in agreement with Barabasz (1975) who pointed out that test anxiety is measurable and that a reduction in
test anxiety by short term psychotherapy appears to be related to an improvement in oral reading rate. One common and specific anxiety is that which Sarason, et al (1960) called test anxiety which is aroused in school or academic situations when a student believes that someone is going to evaluate or pass judgment on his/her adequacy. The SCP technique allowed the child to be monitored in a controlled non-judgemental manner by his/her parents and thus the SCP technique appeared to be related to a reduction in test anxiety for the students in the experimental group in this study.

Hypothesis 2: Attention Span Improvement

Attention span in this study was measured specifically on an oral reading task, rather than attention on or off task, because elementary children spend much of their school day on reading tasks. There is also more emphasis on oral reading tasks in the lower elementary grades. Thus, attention span has very special definition in this study. This may have contributed to the high correlation in this study between the improvement in attention span and oral reading rate.

The results of this study are consistent with the findings of Wine (1971) who found that the test anxious child had trouble paying attention to a task and that students with less anxiety attended more to directions and to task. Other investigators, Browning (1967), Cobb (1972), McKinner, et al (1975) have explored the behavior of students with learning difficulties and have found that one of the primary and significant symptom patterns was short attention span, and that successful remediation programs established improvement in attention. The results of this study are in agreement with Dangel and Hopkins (1979) who likewise found that longer assignments that are held constant
seemed to be related to improvement in attention span.

Hypothesis 3: Oral Reading Rate Improvement

The results of this study agree with the findings of Bond and Tinker (1973) that the accuracy of the assignment of the level of reading material difficulty with the child's reading skills is significantly related to attention span rather than to reading improvement.

The findings of this study are consistent with Juniper Gardens study (1980) which utilized a procedure of parents listening to their child's oral reading which resulted in an increase in attention. In the SCP technique, used in this study, daily oral reading practice by the student provided daily feedback and reinforcement by the parents which appeared to be related to the improvement in the child's attention span and oral reading rate.

All of the students in the experimental group had to begin reading below their grade level so that they could achieve an oral reading rate of 100 wpm. As soon as they were reading at this rate consistently for a week they were raised to the next higher level. In this manner many of the students were able to attain their grade level with an oral reading rate of 100 wpm or better.

Hypothesis 4: Improvement in Grades

Although some changes were noted in teacher assigned grades, no significant improvements between the experimental and control group were recorded in this study by teacher grades in reading, spelling, language and mathematics.

Because of limited budgetary considerations there was no attempt to control for teaching methodology, grading or teacher involvement with the SCP therapist for the students in either the control or the
experimental groups in this study. Both groups of students in this study showed similar movement toward increases in reading grades from the pre to the post test period; the experimental group had 6 increases and the control group had 6 increases.

No significant improvement in reading, spelling, language and mathematics were recorded for the students who received the SCP technique treatment. The lack of improvement in the grades for the experimental group may be due to any one or combination of the following:

1. The child who is distractable, anxious and a slower reader is "turned off" to reading and school. His/her problems may have originated from a learning or emotional disability but nevertheless he/she builds up a resistant, avoidance, and/or emotional overlay (test anxiety) to reading tasks. Before the implementation of the Self Correction structured technique a significantly higher level of measured test anxiety was indicated by a comparison of the means of all the pre (13.32) and post (11.87) test scores of all the students and a significantly lower oral reading rate also existed when the means of all the pre (93.13 words per minute) and post (116.58 words per minute) test scores were compared for all of the students in this study. A similar comparison of the means of the pre scores for the experimental groups (87.50 words per minute) and for the control groups (98.20 words per minute) showed that before the use of the SCP technique the oral reading rate for the treatment groups was significantly lower.

Upon completion of 12 weeks of treatment with the SCP technique, the students in the treatment group showed a significant decrease between the mean pre and post test scores (from 14.11 to 10.11) for measured test anxiety and a significant difference between the means for the pre and post test scores in oral reading rate which increased from
87.50 words per minute to 129.39 words per minute which is almost a 50% increase in oral reading rate.

The Self Correction technique may change the child's reaction to reading as negative, test anxiety producing experience to a less test anxiety producing experience as he/she begins to see daily progress in terms of the increase in the number of pages read and he/she hears his/her rate improve and feels more acceptance of mistakes. With some success in oral reading, increased powers of attending, and less test anxiety, the child may now be ready for the acquisition of additional skills that may be recorded as improvements in grades.

2. Other factors such as a lack of decoding skills, lack of knowledge of phonic and grammar rules, auditory or visual processing problems or undiagnosed severe perceptual or emotional deficits may contribute to a lack of improvement in grades. However, the increase in attention span and decrease in anxiety experienced with the SCP treatment may ease the acquisition of these skills and knowledge.

3. There is a period of dormancy or latency, sometimes referred to as the "sleeper effect" by Weiss (1951) in which a minimum time of 6 weeks lapses before actual changes in grade performance takes place. The SCP technique allowed a 4 to 5 week period of readjustment when behavior and/or achievement may worsen and then begins to steadily improve. Thus the six weeks in addition to the 4 week adjustment period allowed 10 weeks to pass before improvement in grades may begin. This suggested that more than 12 weeks are necessary for noticeable changes to occur that may be reflected in improved grades.

4. Another influence may be the regression toward the mean phenomenon in which extremes of performance (grade increases or decreases) tend to cluster toward the mean and thus these increases
or decreases tend to cancel each other out and no statistical improvement is noted. An analysis of the grade changes in experimental group revealed 9 grade increases and 8 grade decreases which suggested that the increases and decreases cancelled each other out and appeared to contribute to no statistical improvement in grades for the students who received the SCP treatment.

5. Learning appears to go in spurts and plateaus or leveling off takes place before the next gain. In this respect some of the students in this study may be at a plateau and therefore no improvements in grades were noted. The data in this study showed that one male second grader in the control group improved his reading and language grades from D to A and maintained his A's in Mathematics and Spelling. This single spurt in the control group may have cancelled out other gains in the treatment group and was not sufficient to make a significant difference in the improvement of grades for the students in this study.

6. The child's measured test anxiety may have been reduced in the therapeutic situation but may not transfer to the classroom in order to improve his grades. Teachers in this study were not trained in the application of the SCP technique in the classroom for the reduction of test anxiety. Further study is necessary to incorporate procedures for a margin for mistakes in the classroom that may reduce test anxiety and show improved grades. Also further study is needed on the generalization effects of SCP techniques.

7. The impact of SCP may be affected by the time of the school year at which SCP was initiated. This may be particularly true with
reference to the student's improvement in grades. Often a child can improve academically and it will not be immediately reflected in his grades due to teacher expectations and consistancy. The teacher's expectations or the "expectation effect" (Rosenthal, 1970) has an effect of maintaining the teacher's expectations and grading of the student. If SCP is started at the beginning of the year, the teacher, is less likely to be biased by expectations, positive or negative, formed by classroom experience with the student.

If SCP is begun later in the year, as in this study, teacher expectations of the student's abilities, willingness to cope with mistakes, and performance levels may have influenced the student's grades. Analyzing the grade change data showed the following non changes by subject area for the 18 treatment students in this study: reading non changes (11); spelling non changes (12); language non changes (16); and mathematics non changes (16). This study was designed for parent involvement in their child's educational and emotional processes. Due to budgetary considerations, controlling for teacher involvement and expectations was beyond the scope of this study.

8. Other factors that teachers may consider when assigning grades might be effort, neatness, completion of assignments, organization, participation in class as well as actual performance on quizzes, tests and class and home assignments. Subject area grades also tend to reflect the acquisition of skills and information. The SCP technique seemed to help the student improve in attention span and reduce test anxiety which are not academic skills or information. However, these improvements may not be enough to directly improve academic achieve-
ment and the child may need additional direct services in actual skill
development and acquiring information. The SCP therapist may help
the student to formulate goals to improve these classroom performances
in combination with the SCP goals. The SCP therapist may also help the
teacher focus on the observable improvements in attention span, oral
reading rate, and reduction of test anxiety by the student in the
classroom. The SCP treatment appeared to have a more direct effect
on student improvement in attention span and oral reading rate, and
anxiety reduction in the therapeutic situation and less influence on
student grades whereas the teacher's instructional and evaluative
efforts seemed to have more effect on student academic achievement as
reflected in grades. Improving the academic achievement of students
is a multi-variate approach and not a direct versus indirect approach.
Many of the previously mentioned factors may contribute to changes in
the student's progress.

9. The SCP structured technique provides a highly structured
one to one experience for the student in therapy, whereas the teacher
may not have the opportunity to provide as much or as highly structured
one to one experience for the student in the classroom. Consequently,
the student may have to learn to adjust and work with less structure
in the classroom before an improvement in grades is recorded.

Implications of the Study

Implications of this study will now be discussed in the following
three areas: SCP theory, recommendations for changes in procedures
and practice, and future research.
SCP Theory

1. The SCP structured technique encourages the individual student to establish and maintain a balance between the need to control and learning to accept control from others. SCP as an external intervention helps the individual student become more responsive to control from others (parents and therapist) as demonstrated by improvements in following directions, paying attention, coping with mistakes, and becoming self correcting (Willingness Hierarchy). The SCP structured technique initially emphasized external control and social reinforcement provided by the parents and family therapist. The responsiveness of the student to these external controls seemed to result in reduced anxiety, increased attention span, and increased oral reading rate for the student.

The SCP technique helped the individual to adjust the balance of controls in the PIES (physical, intellectual, emotional, social) systems to respond to the control of others. Specifically the students who received the SCP technique in this study demonstrated the influence of being more responsive to the control by others in the following ways:

Physically (P), the students were able to remain seated and paid attention for an increased amount of time. Intellectually (I), the students increased their willingness to use their cognitive processes to follow directions and to decode in order to improve their oral reading rate. Emotionally (E), the students showed a measured reduction in their test anxiety. Socially (S), the students seemed to pay more attention and appeared more responsive to their parents
directions (controls) and social reinforcements.

2. SCP theory states that acceptance by the student and significant others (parents and therapist) of a margin for mistakes made by the student will lessen the test anxiety that the student experiences. By being willing to admit and accept mistakes and lessen test anxiety, the experimental students in this study may have released energy that perhaps was then applied to increases in attention span and oral reading. Theoretically the margin for mistakes perhaps helps to regulate the increase or decrease of test anxiety which in turn may increase or decrease the individual's rate of response as measured by higher oral reading rate. This study seemed to indicate that a decrease in test anxiety appeared to be related to an increase in rate of response as observed by an increase in oral reading rate. Test anxiety is dealt with specifically in the SCP technique by calling attention to the number of mistakes on an oral reading task rather than to the type of mistakes (e.g. mispronunciations, substitutions, omissions, insertions). Parent awareness and utilization of the margin for mistakes may help in the monitoring and evaluation of their own behaviors and those of the student.

3. The Willingness Hierarchy is a keystone in the SCP theory. The willingness to follow directions is often evaluated and recorded on the elementary students report card. It is important for the student to follow the directions of the teacher. The child may be unable to follow directions in that he/she doesn't know how to follow the directions which may indicate a lack of skill development; or the directions may be too complex in which case the directions can be
simplified; or the directions for doing the task may be beyond the ability of the child, in which case the task should be changed. In the SCP technique the assignment of a reading task is first based on a careful assessment of the child's ability to do the assigned oral reading task. In SCP the child begins to read on a reading level at which he/she can read at 100 words per minute. Often the child does not have the skill to read at 100 wpm. In this case, as long as the child has the ability to recognize and say the names of the letters of the alphabet, then the assigned reading task is at the simplest level of the preprimer reading level. It is important to establish and assign the reading task at the child's ability level.

The willingness of the child to use his/her ability to perform the assigned reading task is an important consideration in SCP theory because the child may have the ability and yet not do the assigned task. SCP theory postulates that the child may be anxious over making mistakes or failing on the assigned task, and may refuse to start or complete the task. The child's anxiousness can also lower his/her performance on the task. A margin for mistakes is then established in order to lower the test anxiety level of the child. It is assumed in SCP theory that a person's rate of response or oral reading rate increases with a lessening of test anxiety. The margin for mistakes helps to lessen the anxiety level which leads to an improvement in oral reading rate. Further study should indicate the impact of incorporating these two criteria in the classroom. In other words, a student would have to reach an oral reading rate of 100 wpm with a specified margin for errors before going on to the next reading level.
Recommendations for Changes in Procedures and Practice

1. The lack of improvement in academic grades in this study employing the SCP structured technique suggests the following change in research design. During the time in which the student is receiving treatment by the SCP technique, the teacher and family therapist may exchange feedback weekly with regard to observable changes in the student's performance both in therapy sessions and in the classroom. An additional change in research design may include teacher training in how to incorporate the SCP principles of the Willingness Hierarchy and the margin for mistakes in classroom instructional strategies and objectives. The treatment of the SCP technique and teacher instruction using SCP principles conducted concurrently may have a more direct effect on student grades than either treatment applied singularly or in sequence.

2. The Self Correction technique allows a margin for mistakes as an appropriate part of acceptable behavior and this may help to reduce test anxiety. Seven mistakes (e.g. mispronunciations, substitutions, omissions or insertions) per page were assigned as the margin for mistakes for this study. Based on other investigations by the author, a lower margin for mistakes such as 2 or 3 mistakes, seemed to maintain or increase anxiety in the child, whereas a higher margin for mistakes tended to lower the anxiety level of the child. The students in this study were allowed to make up to 7 reading mistakes on a page as an acceptable performance whereupon the child proceeded to reading the next page. Future studies may wish to increase or decrease the margin for mistakes. The margin for mistakes may be
increased in order to increase reading rate or attention span. It is suggested that the number of mistakes allowed for a child at any grade level, may be decreased to 5 mistakes per page to increase structure. For the elementary level K-6, the margin for mistakes may be increased to 10 to decrease structure. Future investigators who wish to use the SCP technique at the junior high level may assign between 10 and 15 mistakes per page due to the increased complexity of the reading material.

3. SCP structured technique was implemented by school psychologists and counselors with various orientations, lengths of experience, and 15 weeks of training. An analysis of the experimental pre-post assessment data indicated that all family therapists in this study were equally effective with the technique. Other school psychologists and counselors may include the SCP technique with elementary students which may reduce anxiety, increase attention span, and oral reading rate.

Suggestions for Future Research

Specifically, the following areas of SCP need further evaluation.

1. The Self Correction structured technique should be studied over longer time periods with children with mild to moderate deficits as well as with children with severe deficits. The impact of the SCP technique on other school populations such as junior and senior high school students need to be studied.

2. Further study is needed to find out what effects, if any, does SCP technique have on reading comprehension.

3. Further study is needed to see what influence, if any, an
increase or decrease in the margin for mistakes may have on the effect of the SCP technique to change test anxiety, attention span, oral reading rate and grades. A further study may investigate what changes, if any, will occur when the margin for mistakes is varied as indicated by changes in test anxiety or in oral reading rate. Additional research is needed for a more precise determination of the margin for mistakes for each individual to encourage greater changes in test anxiety, attention span, oral reading rate and grades.

4. Further study is needed to explore the effects, if any, of changes in the oral reading rate required for advancement to the next higher reading level as practiced in the SCP technique.

5. Any innovative or new technique with minimal teacher involvement is apt to be ineffective (Miles, 1964; Phillips, 1978; Sarason, 1971). Further studies employing the Self Correction structured technique should ensure active teacher participation such as weekly feedback exchanges between the family therapist and teachers with regard to observable changes in both therapy and classroom settings. Teacher training in the principle and goals of the SCP technique will be applicable to the instruction and management of student performance in the classroom. This combined approach may activate other dimensions of learning for the student.
BIBLIOGRAPHY
BIBLIOGRAPHY


Biemiller, A. The development of graphic and contextual information as children learn to read. Reading Research Quarterly, 6 (1971), 75-96.

Blanche, E. When your child can't read, Academic Therapy, 1972.


Jorgenson, G. Relationship of classroom behavior to the accuracy of the match between material difficulty and student ability. *Journal of Educational Psychology*, 69 (1977), 24-43.

Jorgenson, G.W., Klein, N., Kumar, V.K. Achievement and behavior correlates of matched levels of student ability and material difficulty. *Journal of Educational Research*, v. 71, n. 2, 100-103.


Kavanagh, J.C. Achievement test performance as a function of the interaction between test anxiety and cognitive style in elementary school boys. *Dissertation Abstracts*, 1970, Sept. v. 31 (3-B), 1540.


Linden, W. Practicing of meditation by school children and their levels of field dependence-independence, test anxiety and reading achievement. *Journal of Consulting and Clinical Psychology*, 1973, v. 41, n. 1, 139-143.


Segal, R. Improving perception through the haptic process. *Academic Therapy*, 9, 1974, 419-431.


APPENDICES
APPENDIX A
THE TEST ANXIETY SCALE FOR CHILDREN*
AND ANSWER SHEET

*Sarason, et al, 1960
The Test Anxiety Scale for Children

In the previous section we indicated why in the light of our ultimate objectives concerning the measurement of anxiety we did not employ the therapeutic situation as a way of testing our hypotheses. In the remaining sections of this chapter we describe the measures of anxiety we did employ and our rationale for their format and use. It may be of aid to the reader if we present first one of our measures followed by a discussion of its rationale.

The Test Anxiety Scale for Children (TASC) consists of 30 questions which are read to the class with the following instructions:

I'm going to be asking you some questions—questions different from the usual school questions for these are about how you feel and so have no right or wrong answers. First I'll hand out the answer sheets and then I'll tell you more about the questions.

Write your name at the top of the first page, both your first and your last names. Also write a B if you're a boy or a G if you're a girl.

As I said before, I am going to ask you some questions. No one but myself will see your answers to these questions, not your teacher or your principal or your parents. These questions are different from other questions that you are asked in school. These questions are different because there are no right or wrong answers. You are to listen to each question and then put a circle around either “yes” or “no.” These questions are about how you think and feel and, therefore, they have no right or wrong answers. People think and feel differently. The person sitting next to you might put a circle around “yes” and you may put a circle around “no.” For example, if I asked you this question: “Do you like to play ball?” some of you would put a circle around “yes” and some of you would put it around “no.” Your answer depends on how you think and feel. These questions are about how you think and feel about school, and about a lot of other things. Remember, listen carefully to each question and answer it “yes” or “no” by deciding how you think and feel. If you don’t understand a question, ask me about it.
Now let's start by everybody putting their finger on Number 1. Here is the first question. Number 1. "Do you worry when the teacher says that she is going to ask you questions to find out how much you know?"

(This procedure of introducing the questions is repeated for several of them and the examiner continues throughout to say the number of the question before reading it.)

When the teacher administers the scale the instructions are the same except that the teacher makes explicit that she will not see the answer sheets; someone (who should be specified) not directly connected with the particular school will receive the answer sheets in order to determine how children think and feel about the questions which will be asked. The questions are always read to the class and the children are never required to read them. They are asked to encircle either a yes or a no. In grades 1 and 2 the words "yes" and "no" are printed on the board and before each question is read the children are asked to put their finger by the appropriate number on the answer sheet. A child's score on the scale was the number of times he encircled "yes" on his answer sheet. We give below the TASC.

1. Do you worry when the teacher says that she is going to ask you questions to find how much you know?
2. Do you worry about being promoted, that is, passing from the _______ to the _______ grade at the end of the year?
3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not on you?
5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?

* We have not encountered difficulty in administering the scale to children in grades 1 and 2. The fact that we have always administered the scales in the spring, when the children are near the end of the school year and have made strides in the comprehension of language and recognition of numbers, probably contributed to the ease of administration.
9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?

10. When the teacher is teaching you about reading, do you feel that other children in the class understand her better than you?

11. Do you think you worry more about school than other children?

12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?

13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school?

14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?

15. When you are home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?

16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?

17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?

18. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?

The examiner then makes the following statement before continuing:

In the following questions the word “test” is used. What I mean by “test” is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the blackboard. Do you understand what I mean by “test”—it is any time the teacher asks you to do something to find out how much you know.

19. Are you afraid of school tests?

20. Do you worry a lot before you take a test?

21. Do you worry a lot while you are taking a test?

22. After you have taken a test do you worry about how well you did on the test?

23. Do you sometimes dream at night that you did poorly on a test you had in school that day?

24. When you are taking a test, does the hand you write with shake a little?

25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?

26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?

27. Do you wish a lot of times that you didn’t worry so much about tests?

28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?

29. While you are taking a test do you usually think you are doing poorly?

30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?
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**ANSWER SHEET**

Test of Anxiety in School Children

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What changes have you seen this week?
APPENDIX B

GRAY ORAL READING TEST (Gray, 1963)

EXAMINER'S RECORD BOOKLET

FORM A AND FORM B
# EXAMINER'S RECORD BOOKLET

for the

GRAY ORAL READING TEST

FORM A

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## SUMMARY

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## TYPES OF ERRORS

1. Aid
2. Gross Mispronunciation
3. Partial Mispronunciation
4. Omission
5. Insertion
6. Substitution
7. Repetition
8. Inversion

---

## OBSERVATIONS

(Check statement and circle each part)

- Word-by-word reading
- Poor phrasing
- Lack of expression
- Monotonous tone
- Pitch too high or low; voice too loud, too soft, or strained
- Poor enunciation
- Disregard of punctuation
- Overuse of phonics
- Little or no method of word analysis
- Unawareness of errors
- Head movement
- Finger pointing
- Loss of place

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## COMMENTS:

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THE BOBBS-MERRILL COMPANY, INC.
A SUBSIDIARY OF HOWARD W. SAMM & CO., INC.
Publishers - INDIANAPOLIS - NEW YORK
A. 1. Look, Mother, look.
    See me go.
    I go up.
    I come down.
    Come here, Mother.
    Come and play with me.

Time __________ Seconds

Questions

  1. What was the girl in this story doing?
  2. Who was she talking to?
  3. What two things did the girl ask Mother to see her do?
  4. Who was Mother to play with?

Answers

  1. Swinging or going up and down (1)
     Showing her mother how she could swing (1)
  2. (Her) Mother (1)
  3. Go up and come down or I go up and down (1)
  4. The girl (question her or me) (1)

Number Right __________

      Run with me to the boat.”
      They ran and ran.
      “This is fun,” said the boy.
      “Look,” said the girl.
      “I see something in the boat.
      It is my kitten.
      She wants to play.”

Time __________ Seconds

Questions

  1. Where did the boy want the girl to run?
  2. Who said it was fun to run?
  3. What was in the boat?
  4. Who saw the kitten first?

Answers

  1. To the boat (1)
  2. The boy (1)
  3. A kitten or her kitten (1)
     Boy’s kitten (1)
  4. The girl (1)
A. One morning a boy made a boat. "Where can I play with it?" he asked.
Father said, "Come with me in the car! We will take your boat with us."
Soon the boy called, "Please stop. I see water. May I play here?"
"Yes," said Father. "Have a good time."

Time: ___ Seconds

Questions
1. What did the boy make one morning?  A boat (1)
2. What did he say he wanted to do with it? Play with it (1)
   Sail it or float ... or put it in water (½)
3. What did the boy see as they rode in the car? Water (1)
   Lake (½); pond (⅓)
4. When he saw the water what did he ask his father to do? Stop or stop and let him play (1)
   Let him play (½)

Number Right: ___

A. One day five children went out to play in the beautiful white snow. They played for a long time and then began to make snow animals.
   One of the animals was a dog. Soon the dog next door came out of the house. When he saw the snow dog he said, "Bow-wow."
   The children laughed. "Now we have a dog that can bark."

Time: ___ Seconds

Questions
1. In what were the children playing? (Beautiful) (white) snow (1)
2. What did they make out of the snow? A dog or snow dog (½)
3. While they were playing what came out of a house? A dog (real), (live), (neighbor's), (another) (1)
4. What did the children say the real dog could do? Bark or say bow-bow (1)
A. 5. It was pet day at the fair. The children were waiting for the parade of animals to begin. They had trained their pets to do many different tricks. Among them was a tall boy whose goat made trouble for him. It kicked and tried hard to break away. When it heard the band it became quiet. During the parade it danced so well that it won a prize.

Time _________ Seconds

Questions

1. What day was it at the fair?
   - Pet (day) (1)
   - Animal (day) or animal parade (day) (%)

2. What had the children trained their pets to do?
   - (To do) (many) (different) tricks (1)
   - Dance or do many things (%)

3. What animal made trouble for one boy?
   - A goat or his goat (1)

4. What did the goat do that won a prize?
   - Danced (in the parade) (1)

Number Right _________

A. 6. Airplane pilots have many important jobs. They fly passengers, freight, and mail from one city to another. Sometimes they make dangerous rescues in land and sea accidents, and drop food where people or herds are starving. They bring strange animals from dense jungles to our zoos. They also serve as traffic police and spot speeding cars on highways.

Time _________ Seconds

Questions

1. Whom is this paragraph about?
   - Airplane pilots (1)
   - Airplane pilot (½), pilots (%) Airplane driver (%)

2. What do they take from city to city?
   - Passengers, mail, freight (any two of these) (1)
   - Mail or freight or animals and food (%) Passengers and food (%)

3. What kind of rescues are sometimes made in land and sea accidents?
   - Dangerous (1)

4. What do airplane pilots do when serving as traffic police?
   - Look for (or spot) speeding cars (1)
   - Track (or stop) speeding cars (%) Stop cars (0)

Number Right _________

Aid 1
Cross 2
Mispronunciation 3
Partial Mispronunciation 4
Omission 5
Insertion 6
Substitution 7
Repetition 8
Inversion 9
Total Errors
A. 7. Hundreds of years ago, most of Europe was a very poor region, but China, a large country in eastern Asia, had many of the comforts of a rich civilized nation. Only a few people from Europe had visited this distant region. One was the famous Marco Polo. He learned some of the languages that were spoken in China and served its great ruler for many years.

Time ______ Seconds

Questions

1. What kind of region was most of Europe hundreds of years ago? (Very) poor (1)

2. What country enjoyed many comforts than Europe? China (1)

3. Who was one of the few people from Europe who visited China? Marco Polo (1), Polo (5)

4. What did Marco Polo learn in China? Some or a few of the languages (1)

Number Right ______

A. 8. The eager spectators who had cheered the plucky Warriors through eight hard-fought innings were silent. Only a run was required to defeat the much feared Champions, who had previously defeated all opponents. The spectators had earlier criticized the umpire severely. Now their faces were tense with excitement as the players took their positions.

Time ______ Seconds

Questions

1. How had the spectators encouraged the plucky Warriors? (By) cheering or cheered (1)

2. How many runs were needed to defeat the Champions? One or a run (1)

3. Whom had the spectators criticized early in the game? The umpire (1)

4. How did the faces of the spectators look as the players took their positions? Tense (with excitement) or sullen (1)
The oil industry has been greatly increased by recent advances in science. Geologists have discovered new ways of locating veins of oil-producing rock. Problems of gusher control have been solved. Very effective also are newer methods of refining crude oil which have resulted in a higher ratio of quality fuel oil from a given volume of crude oil.

Questions

1. What industry does this paragraph discuss?
   Oil (industry) or petroleum (industry) (1)

2. What kind of rock have geologists found new ways of locating?
   Oil producing rock (1)

3. For what purpose have new and effective methods been developed?
   To refine crude oil or change crude oil to good oil (1)

4. What has been the result of the use of the newer methods of refining crude oil?
   More fuel or quality oil from crude oil; or higher ratio of quality oil from crude oil (1)
   Better oil than at first (1)

A. 10. In response to the impulse of habit, Joseph rose and spoke as in former days. He spoke vigorously, continuously, and persuasively while the others listened attentively but in grim and contemptuous silence. Finally exhausted, Joseph hesitated for a moment; as often happens in such circumstances he became confused and was unable to resume speaking.

Time ____________ Seconds

Questions

1. To what impulse did Joseph respond when he rose to speak?
   Habit (1)

2. In what manner did he speak?
   Used to it (1), or natural (1)
   Vigorously, continuously, persuasively (any two) (1)
   Persistently, consistently (1); vigorously and intently (1)
   Attentively and in (contemptuous) silence (1)
   Attentively (1), contemptuously (1), quietly (1), closely (1), in silence (1)

3. How did the others listen?
   He was or became confused (1)
   Flustered (1)
Many of the hypotheses about physical phenomena formulated by early philosophers were inconsistent and in most cases could not be universally applied. In order to develop accurate principles very capable physicists, mathematicians, and statisticians had to cooperate wholeheartedly over long periods of time to verify numerous basic facts and assumptions.

Time ____________________ Seconds

A. 11. Many of the hypotheses about physical phenomena formulated by early philosophers were inconsistent and in most cases could not be universally applied. In order to develop accurate principles very capable physicists, mathematicians, and statisticians had to cooperate wholeheartedly over long periods of time to verify numerous basic facts and assumptions.

Time ____________________ Seconds

A. 12. In a concluding lecture on sidereal (si-dér'e al) spaces, the astronomer contrasted the infinitesimal (in fin i tin es'mal) difference in the distance of the moon from the earth at apogee (ap'o je) and at perigee (per'i je) with the great difference in the distance of the earth from the sun at aphelion (af'el'yon) and at perihelion (pē ri hel'yon). The students interrogated (in tér'o gat'ed) him, evidencing precociousness (pré kō shus' néz) and lucidity (lu sid'i ti) in expression.

Time ____________________ Seconds
A lieutenant clambered wearily over the detritus piled against the redoubts. Beneath a canopy of empyrean blue lay the quiet, bucolic landscape, its pristine beauty now defiled by myriad diminutive promontories thrown up by the mortar shells, but radiating momentarily an inexplicable calm and peace.
EXAMINER'S RECORD BOOKLET
for the
CRAY ORAL READING TEST
FORM P

Name_________________________________________Grade________Age________
School_________________________________________Teacher________Sex________
City_________________________________________State________
Examiner_________________________________________Date________

**SUMMARY**

<table>
<thead>
<tr>
<th>Passage Number</th>
<th>No. of Errors</th>
<th>Time (in Seconds)</th>
<th>Passage Score</th>
<th>Comprehension</th>
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**TYPES OF ERRORS**

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**OBSERVATIONS**

(Check statement and circle each part:)

- Word-by-word reading
- Poor phrasing
- Lack of expression
- Monotonous tone
- Pitch too high or low; voice too loud, too soft, or strained
- Poor enunciation
- Disregard of punctuation
- Overuse of phonics
- Little or no method of word analysis
- Unawareness of errors
- Head movement
- Finger pointing
- Loss of place

**Comments:**

_____________________________________________________________________
1. Look, Father.
   See the ball.
   I want you to play.
   We can play ball here.
   Come, Father.
   Play ball with me.

Time: ________ Seconds

Questions                                      Answers
___1. Who was the boy talking to?             Father (1)

___2. What did the boy want his father to see? The ball (1)

___3. What did the boy want to do?            Play (base)ball with Father (1)

___4. How many were to play ball?              Two (1)

Number Right: ________


B. 2. A girl ran to the house.
   "Mother," she said.
   "I want something to eat."
   Mother said, "See what I have for you. You will like it."
   "Thank you," said the girl.
   "This is very good. Where may I eat it?"

Time: ________ Seconds

Questions                                      Answers
___1. Who ran to the house?                   (A) girl (1)

___2. Who did she speak to?                   Mother (1)

___3. What did she ask for?                  Something to eat or food (1)

___4. What did she say about the food?       This or it is good (1)
A. 3. A boy had a wagon. He ran with it to a store. Soon he came back with a box. He called his dog and said, "Jump in, Happy. This is your: ." In the morning the boy had a surprise. Happy was not in the box. Three kittens were there.

Time _______ Seconds

Questions
1. Where did the boy go with his wagon? (To the) store (1)
2. What did he get at the store? (A) box (1)
3. Who did he get the box for? Happy or his dog (1)
4. What was in the box the next morning? (Three) kittens (1)

Number Right: ______

B. 4. A little girl ran out of a white house into a big yard. "Mother," she said, "my pet bird is gone. It went out of the open window."

Mother laughed and said, "Look on my hat." When the girl looked she had a big surprise. A yellow bird with blue wings was on Mother's pretty hat. It was the bird that flew away.

Time _______ Seconds

Questions
1. Who was the girl talking to in this story? Mother (1)
2. What had the girl lost? (Her) pet bird (1)
3. When the girl saw her bird where was it sitting? (On) Mother's pretty hat (1)
4. What was the color of the bird's wings? Blue (1)

Number Right: ______

Types of Errors

<table>
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B. 6. Twelve boys were waiting in line at a party to play a game. A picture of a lion hung on the wall before them. They first put large paper bags over their heads so they couldn't see. Each of the boys then tried to pin a ribbon on the lion's tail. They put ribbons on the lion’s legs, head, and body. All missed its tail. So none of them won the prize.

Time _______ Seconds

Questions                              Answers
1. What were the boys waiting in line to play? (A) game (1)
2. A picture of what animal hung on the wall? (A) lion (1)
3. What did the boys put over their faces so they couldn't see? (Paper) bags (1) A bag (1)
4. On what part of the lion did they try to pin the ribbon? On the lion's tail (1)

Number Right: ________

B. 6. One morning a big poster outside of Oak School told people about a basement bargain sale. Inside were long counters on which things collected by the children were displayed. Price tags were fastened to all articles. Most of the customers bought old but useful furniture. The sale was a huge success, and the money was used to purchase library books.

Time _______ Seconds

Questions                              Answers
1. What was going on in the basement of Oak School? (Bargain) sale or selling things or rummage sale (1) Children, or boys and girls of Oak School (1) Children and grown ups (1)
2. Why had collected the things for the sale? (Long) counters or long tables (1) Tables (1)
3. On what were the things displayed? Library books or books for the library (1) New (or school) books (%)
4. What was purchased with the money that was made?
II. 7. All of us admire the great skill of a good truck driver. He hauls many tons of things almost daily, including dangerous explosives. On mountain roads and in other isolated places he faces real dangers alone. He is his own mechanic. Sturdy and dependable, he will interrupt his schedule to help anyone who encounters real difficulty on a highway.

Time: ________ Seconds

Questions

1. About whom is this paragraph? Truck driver (1)
2. What does he haul that makes his trips dangerous? Explosives (1)
3. On what kind of roads does he face real dangers alone? Mountain or isolated roads (1)
4. For what purpose does he often interrupt his schedule? To help people in difficulty (1)

Number Right: ________

B. 8. Rocky portions of the earth's surface are always changing. Many huge glaciers in the mountains carry along immense boulders which crush the rocks beneath. Chemicals in many streams penetrate rocks and dissolve them. Rocky surfaces are also broken up by processes of freezing and thawing which occur in most regions of alternate hot and cold weather.

Time: ________ Seconds

Questions

1. Which portions of the earth's surface are always changing? Rocky parts or rocky or rock surfaces (1)
   Rocks or rocky bases (1)
2. What are found in glaciers that crush the rocks beneath them? (Huge) boulders (1)
   Loose rocks (½) stones (0)
3. What is found in streams that help to dissolve rocks? (Penetrating) chemicals (1)
4. What processes produced by the weather break up rocky surfaces? Freezing and thawing (1)
   Heat and cold (½)
F. 8. After the American Revolution the colonies became states, each one having a governor. What was urgently needed was a federal government to insure domestic peace and to protect citizens from enemy attack. A constitutional convention was convened. After heated controversy, a constitution was prepared and submitted to the states for approval.

Time: _______ Seconds

Questions

1. When did the American colonies become states?
   Answers: After the American Revolution (1)

2. What was needed to protect civilians from enemy attacks?
   Answers: Efficient, or strong (federal) government or powerful government (1)

3. Who attended the assembly that was held?
   Answers: (State) delegates or representatives (1)

4. What did the state delegates prepare when they assembled?
   Answers: Constitution (1)

Number Right: _______

R. 10. Beside the fireplace with its polished fixtures was a mohair chair which was in sharp contrast (kōn′trast) with a brilliant cover on a nearby footstool. Against the opposite wall stood a desk with stationery protruding from all its pigeonholes. But the object to which Alice's eyes returned repeatedly was a large flagon of incomparable (in kŏm′prəpərəbl) value and startling beauty.

Time: _______ Seconds

Questions

1. Where was the mohair chair located?
   Answers: Beside or near by or next to the fireplace (1)

2. In what part of the desk was the stationery kept?
   Answers: Pigeonholes (1)

3. What was the object which most attracted Alice's attention?
   Answers: A flagon (1)

4. What were the two characteristics of the flagon?
   Answers: Value and beauty or Valuable and beautiful or Priceless and beautiful (1)
B. 11. The visage (viz’ij) of the pontiff was a familiar sight amidst the ornate decorations of the court. Famous for his politeness, he was as familiar with worldly affairs as with theology—a master strategist (strat’e jist) who could mold saints and sinners into a unified group or, if the situation justified such steps, disown those unregenerate with a single quiet reproof.

Time ... Seconds

Questions
1. Who was a familiar sight at the Court?
2. In what two fields was he equally familiar?
3. What two groups could he mold into one unified group?
4. How did he disown unregenerate?

Answers
1. A pontiff (1)
2. Worldly or secular or temporal affairs and theology or religion (1)
3. Saints and sinners (1)
4. By a single word or glance (1)

Number Right...

B. 12. An immediate rejection of customary rituals was unlikely as cultists steeped in traditional tribal lore advocated propitiation (pro’sh’i ə’shōn) of imaginary deities. Their stubborn opposition to the abandonment of paganism subsequently brought opprobrium (ə pro’bri əm) upon them, and historians record a cessation of eleemosynary (ə ə məs’nər) enterprises until such customs were discontinued.

Time ... Seconds

Questions
1. What were the cultists not likely to renounce?
2. What did they want to propitiate or appease?
3. What did the cultists bring upon themselves by their unwillingness to abandon paganism?
4. What type of enterprise ceased as long as paganism was practiced?

Answers
1. Their customary or usual rituals (1)
2. Imaginary deities (1)
3. Opprobrium or reproach or disgrace or contempt (1)
4. Eleemosynary or charitable (1)

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II. 13. The ophthalmologist (ophthalmologist) sent cultures to the microscopist (microscopist) requesting his opinion as to the causative (causative) organism (organism) of a painful conjunctivitis (conjunctivitis). A delay resulted when the expert on microscopy (microscopy) consulted the histomorphologist (histomorphologist) before giving a report. Meanwhile, an anodyne (anodyne) was prescribed to forestall a recurrence (recurrence) of the patient's unfortunate sharp painful attacks.

**Questions**

1. To whom did the ophthalmologist send cultures?
2. What was the microscopist asked to find?
3. With what disease was the patient afflicted?
4. Why was an anodyne prescribed?

**Answers**

1. Microscopist (1)
2. Causative organism or organism causing trouble or pain or disease (1)
3. Conjunctivitis (1)
4. To prevent a recurrence of the painful attacks; to forestall more pain (1)

**Number Right**

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**Time** 100 Seconds

**Number Right** 3