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SOCIAL INTERACTION: A NEGLECTED REINFORCING
COMPONENT IN A COGNITIVE-BEHAVIORAL TREATMENT
FOR CHILDREN WITH ATTENTION DEFICITS

by

David C. Fisher

B.A., University of Minnesota, 1980

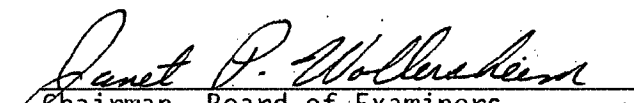
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Psychology

Social Interaction: A Neglected Reinforcing Component in a Cognitive-Behavioral Treatment for Children with Attention Deficits (119 pp.)

Director: Janet P. Wollersheim 

This study investigated the effects of non-contingent social reinforcement on several social and academic behaviors in grade school children. A total of 24 children in the second through fifth grades were selected on the basis of teacher ratings on the hyperkinesis index of the Conners Teacher Rating Questionnaire and teacher reports of disruptive classroom behavior. Subjects were divided into a) a high social reinforcement verbal self-instructional (VSI) training group, b) a low social reinforcement VSI group, and c) a no-contact control group. Children in VSI groups were removed from their classrooms during four 40-minute training periods which focused on teaching academic skills. During these periods subjects in the low social reinforcement VSI condition were exposed to a tutor who acted in a rather impersonal, "mechanical" fashion and only rarely talked about things not directly related to the particular academic task at hand. When teaching in the high social reinforcement VSI condition however, tutors acted in a manner which expressed much more personal interest in the child. This condition included frequent, informal conversations about such things as home life or friends at school. While no significant between group differences were noted during the tutoring sessions, observations of classroom behavior indicated that high social reinforcement children had significantly less undesirable behavior than controls on post therapy measures of inappropriate vocalization. Also, strong but nonsignificant trends toward improved behavior were noted on a range of other behavioral classroom measures for children in the high social reinforcement condition only. Results are discussed in terms of the need for future research on the effects of therapist personality on treatment outcome.

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Chapter 1

INTRODUCTION

Early descriptions of "hyperkinetic impulse disorders" were published in the 1950's by Laufer, Denhoff, and Solomons (1957) in an attempt to clarify existing definitions of the syndrome. Their list of characteristic traits was diverse, including such behaviors as impulsiveness, hyperactivity, poor school work, and irritability. Due to the great variability of the symptomology among children who were diagnosed with this disorder, Laufer et al. noted that no single condition could be considered as an adequate diagnostic criterion.

More recently, the clinical picture of this syndrome has become further complicated as researchers have identified and focused on a greater variety of symptoms. For example, although a high activity level is still the most frequently stressed problem in clinical descriptions of the condition (Firestone, 1975), the "hyperkinetic" child has been shown to exhibit several deficiencies in attentional processes. These include inability in: (1) delaying initial impulses to consider alternatives on discrimination tasks, (2) focusing attention for an extended period of time, and (3) the selective perception of figures independently of the context in which they are presented (Campbell, Douglas, & Morgenstern, 1971; Cohen, Weiss, & Minde, 1972).

The utility of using a single hyperkinetic/minimal brain disfunction/attention deficit (HK/MBD/AD) classification which included

such a wide variety of symptoms was eventually questioned. There were a number of studies (Langhorne, 1976; Routh & Roberts, 1972; Werry, 1968) which found no correlations between the occurrence of many of the symptoms in this disorder. In addition, some of the measures originally used in detecting these conditions have proven to have poor reliabilities over time or across situations (Loney, 1980). Obviously, a more precise definition of the syndrome and improved diagnostic measures were needed.

The recent edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-III) attempts to give a much more precise and useful definition. The old diagnostic label of Hyperkinetic Reaction of Childhood (DSM-II) has been replaced by the classification of Attention Deficit Disorder. This new category is divided into the active sub-types of Attention Deficit Disorder with Hyperactivity and Attention Deficit Disorder without Hyperactivity. The two essential types of behavior that a child must display to be considered as having an attention deficit are "signs of developmentally inappropriate inattention," and "impulsivity." The emphasis in DSM-III has thus been put on inattention rather than on hyperactivity. This change has been supported by recent studies which have shown that attentional difficulties have usually been present in children given similar diagnoses in the past and that attentional deficits often continued long after the hyperactivity diminished (Douglas, 1972; Dykman, 1971).

Development and Prognosis

Early studies (Bakwin & Bakwin, 1966; Eisenberg, 1966) of the hyperkinetic impulse disorder have usually stated that the syndrome gradually disappears as the child reaches puberty. Laufer and Denhoff (1957) note that "in later years this syndrome tends to wane spontaneously and disappear. We have not seen it persist in those patients whom we have followed to adult life." Unfortunately, it now appears that this early optimism was premature. While the obvious symptom of excessive motor behavior eventually does improve, the child who is diagnosed as hyperkinetic is likely to encounter a variety of problems which either persist into or first make their appearance during adolescence and adulthood.

In the first study of its kind Menkes, Rowe, and Menkes (1967) conducted personal interviews, neurological evaluations, and brief psychometric testing with fourteen adults who had been diagnosed as hyperkinetic an average of 24 years earlier. Of the fourteen subjects, only eight were self-supporting, while four were institutionalized psychotics, and eight had spent some time living in other institutions such as jails or hospitals for the retarded. There was evidence of neurological abnormalities in nine of the subjects, and three showed symptoms of restlessness and distractibility.

In a later study (Weiss, Minde, Werry, Douglas, & Nemeth, 1971), sixty-four "hyperactive" children were first evaluated when they were between 6 and 13 years old. The long-term results of a five year follow-up of these children were striking. Although the symptoms of hyperactivity, excitability, aggressiveness, and distractibility

generally had improved, distractibility had replaced hyperactivity as the major complaint of the mothers. Other prevalent symptoms included a marked lack of ambition, antisocial behavior, few close friends, depression, and emotional immaturity. Academic performance tended to be poor, with 70 percent repeating one or more grades. Classroom behavior was similarly poor with teachers rating the children high in antisocial behavior, restlessness, and lower in ability to concentrate than their classmates.

Subsequent research has confirmed the general findings of Weiss et al. Excess motor activity usually has been found to decrease during adolescence but a variety of attentional deficiencies, behavioral problems, a lack of social skills, and low achievement levels tended to continue into adulthood.

By the inclusion of the new category "Attention Deficit Disorder, Residual Type," DSM-III has recognized that many symptoms often last long after the disappearance of the hyperactivity. In order to receive a diagnosis within this third sub-type of Attention Deficit Disorder the individual must have met at one time the criteria for the diagnosis of Attention Deficit Disorder with Hyperactivity. Also, it is required that "other signs of illness have persisted to the present without periods of remission . . . [such as] difficulty organizing work and completing tasks, difficulty concentrating, being easily distracted, [or] making sudden decisions without thought of the consequences."

Prevalence of the Disorder

One commonly cited figure for the occurrence of Attention Deficit Disorders in the U.S. school population is 10 percent (Masland, 1965). Among children referred to mental health facilities, however, roughly 50-65 percent have been diagnosed as having an attention deficit (Laufer & Shetty, 1975). Such estimates are affected by the methods of investigation, the population studied, and the diagnostic criteria employed (Cantwell, 1975). For example, studies which require hyperactive behavior either in an interview setting or when under direct observation tend to show a lower incidence of the syndrome than when behavior rating scales are used. Low socioeconomic status and race have also been related to the number of children exhibiting "wild behavior" or receiving teacher complaints about inappropriate classroom activities (Lapouse & Monk, 1964). Age and sex differences in children have been correlated with hyperactive behavior. Lapouse and Monk have shown that children ages 6-8 have significantly more problems with disruptive behavior than children between the ages of 9 and 12. Other studies (Paine, Werry, & Quay, 1968; Werry, 1968) have confirmed that attention deficit disorders occur predominately in males. Estimates of the ratio of males to females with the disorder range from a low of three to one (Paine, Werry, and Quay, 1968) to a high of ten to one (DSM-III).

Drug Treatment

Treatment with stimulant drugs, i.e. methylphenidate, dextroamphetamine, and pemoline, is currently an extremely popular and

controversial method of reducing hyperactive behavior. As indicated by a survey of children in Baltimore County, Maryland, the percent of children receiving medication for attention deficits increased from 1.07% in 1971, to 2.08% in 1975, to 2.12% in 1977 (Krager, Safer, & Earhardt, 1979). It has been estimated that at the present time between 600,000 and 700,000 school age children are being given psychostimulant medication during the school year (O'Leary, 1980). Although the incidence of this treatment does appear to be leveling off, the use of stimulants has dramatically increased since the early 1960's (Sprague & Gadow, 1976).

It was originally proposed that psychostimulants would help foster the academic achievement of children with attention deficits because of their ability to lengthen attention spans. This hypothesis has not been supported in subsequent research. Short-term studies have produced equivocal data concerning the effectiveness of stimulants on improving social and academic behaviors (Pelham, 1975), while drug studies of moderate length (3 to 6 months) have shown no consistent gains on the WRAT (Gittelman-Klein & Klein, 1976; Hoffman, Engelhardt, Morgolis, Polizios, Waizer, & Rosenfeld, 1974). Any long-term benefits of psychostimulant medication are unclear because of the generally poor experimental design criteria in the relevant studies (O'Leary, 1980). Therapeutic outcomes reported in the long-term experiments, however, have been poor, with none showing that children benefit academically from the use of psychostimulants. In an extensive literature review Cunningham and Barkley (1978) conclude that for academic achievement

"Prolonged drug treatment has little, if any, effect on the long term adjustment of hyperactive children."

Drug treatment may have a strong impact on the child's social behavior. When treated with psychostimulants off-task behavior is usually quickly reduced. Consequently, children treated with stimulants have consistently been judged by teachers to be more compliant, attentive, and cooperative in the classroom (Conners & Werry, 1979; Cantwell & Carlson, 1978). These findings undoubtedly have contributed to the popularity of stimulant drug treatment by showing parents an easy way to improve their children's behavior.¹ The maintenance of behavioral treatment gains achieved through stimulant medication is believed to be extremely poor. Abikoff (1979) concluded in his review of drug studies that "Maintenance of treatment gains has been disappointing following the withdrawal of stimulant medication with hyperactive children."

In addition to the limitations of stimulant medication alone in changing undesirable behavior, concerns have been expressed about potentially negative behavioral and physical side effects (Cole, 1976; Douglas, 1975) of these drugs. The consequences of the child's knowledge that drugs are needed to control his behavior are a major concern. Although there is a documented growth rebound after children stop taking Dexadrine (Safer & Allen, 1976), some other stimulants have

¹The pharmaceutical industry itself has also supported and encouraged the widespread use of drug therapy. Many full-page psychostimulant advertisements placed in professional journals confirm the fact that there is much money to be made with such a huge potential market of elementary school children.

at least a temporary effect of stunting growth (Rapoport, Quinn, Bradbard, Roddle, & Brooks, 1974). Increases in heart rate and blood pressure have also been noted (Cohen, Douglas, & Morgenstern, 1971). Finally, there is data (Pelham, 1975, Sprague & Sleator, 1973) which suggests that many physicians overmedicate children. This results in both the lowering of participation in classroom activities and the inhibition of cognitive abilities.

Dietary Treatment

In recent years the relationship between the ingestion of "salicylate-like" compounds in food and hyperkinetic behavior has been investigated. Feingold (1975), recommended a special diet which eliminated a variety of foods containing naturally occurring salicylates (e.g. tomatoes, apricots, cucumbers, and pork) and all items containing artificial flavors and colors, as a treatment for hyperactive behavior. There are approximately 200,000 children on the Feingold diet at the present time (Lambert, Sandoval, & Sassone, 1978). Although Feingold has reported much improvement in patients who were treated with this diet (Feingold 1973, 1975a, 1975b, 1976), attempts to replicate his findings have generally been methodologically inadequate. Conners (1975), Conners, Goyette, Southwick, Lees, & Andrulonis (1976), and Rose (1978), however, have obtained positive results for the success of the diet in three studies which appear to be more empirically rigorous than previous research. At this time the effectiveness of Feingold's dietary approach is promising but more carefully controlled research is needed before any definite conclusions may be drawn.

Behavioral Treatments

Various operant techniques have been used to reduce disruptive behavior and improve attention. Alabiso (1972) noted that attention was incompatible with hyperactive behavior and that it would inhibit off-task behavior if it were to be conditioned in children. Perhaps the most commonly used operant technique to increase attentive behavior is the token economy. A token economy creates rapid changes in behavior, is adaptable to many situations, and is an effective tool in the hands of nonprofessionals. Although the immediate results of a token economy may be encouraging, both its limited treatment maintenance (O'Leary, 1976) and lack of generalization to non-treatment settings (Bornstein & Hamilton, 1975; Johnson & Bolstad, 1976; Levine, 1974) are serious drawbacks.

Much consideration is now being given to the effectiveness of reinforcing adult behaviors on children. Theoretical explanations of social development and classroom learning have stressed the role of social reinforcement (Bandura & Walters, 1963). Adult approval and attention have been successfully used to control non-attending behavior (Allen, Henke, Harris, Baer, & Reynolds; 1967), reduce disruptive classroom behavior (Becker, Madsen, Arnold, & Thomas, 1967; Bornstein & Quevillon, 1976; Thomas, Becker, & Armstrong, 1968; Zimmerman & Zimmerman, 1962), and improve various academic skills (Curry, 1960; McLaughlin & Lane, 1975; Spence, 1967). Several studies, in fact, have shown social reinforcers can be more effective with some children than highly valued material incentives (Layne, 1978; Stevenson, 1961; Terrel & Kennedy, 1957).

Behavioral treatments in general have a drawback in that they require much time and effort on the part of the person who reinforces appropriate behavior. The adult-child ratios in treatment typically vary from one-to-one (Whalen & Henker, 1976), to one-to-three (Ayllon, Layman, & Kandel, 1975). Such time-consuming interventions are unrealistic in many situations.

Combinations of Drug and Behavioral Treatments

Two quasi-experimental case studies have described changes in non-attending behavior in children who were gradually withdrawn from medication while a subsequent behavioral treatment was introduced (O'Leary, 1977; Pelham, 1977). Both of these studies found that the child's behavior was as restrained during the behavioral treatment as it had been during the medication. Other single-subject experiments (Shafto & Sulzbacher, 1977; Whalen & Henker, 1976) and group outcome studies (Christensen & Sprague, 1973; Gittelman-Klein et al. 1979; Wolraich et al. 1978) have confirmed that both drug and behavioral treatments can be successfully used in combination to control hyperactive behavior.

In a study on the relative effectiveness of methylphenidate and behavior modification, Gittelman-Klein et al. (1979), found that a combination of behavior therapy and methylphenidate was the most successful in reducing disruptive and inattentive classroom behavior, followed by methylphenidate alone, and behavior therapy plus a placebo being the least effective.

With further research it seems possible that drug treatment, which quickly reduces off-task behavior, and behavior therapy, which improves academic performance, might someday be extremely effective when used together to modify the behavior of children with attention deficit disorders.

Cognitive-Behavioral Treatments

Partly due to the limitations of existing treatments cognitive-behavioral modification (CBM) therapies have been developed. The merger of cognitive and behavioral treatments was spurred on by interest in the 1960's on the role of cognitive processes in establishing children's self-control over motor behavior (Bem, 1967; Lovaas, 1964; Luria, 1961; Vygotsky, 1962). The resulting CBM therapies are an attempt to apply the principles and empirical rigor of operant techniques to cognitions.

The cognitive approach has its theoretical foundations in the work of two Russian psychologists, A.R. Luria and L.S. Vygotsky. Luria was interested in the theories of Vygotsky which explored the controlling functions of speech. Based on Vygotsky's work, he proposed a three-stage developmental sequence which described the gradual internalization of overt verbalizations. During the first stage postulated by Luria, only the speech of other people has a controlling influence on children. The semantic content of the controlling speech is irrelevant at this point as only the basic stimulus properties of the speech can influence behavior. During the second stage, children become

capable of controlling their behavior by listening to their own vocalizations which still lack semantic content. Luria's final stage occurs when the child uses covert speech to control his or her own overt behavior. At this time the child's behavior closely approximates the organization found in the association of semantic meanings in speech.

Up to the time of Luria's model theories of cognitive activity in children had little impact on clinical practice. In an attempt to bridge the gap between theory and clinical utility the regulatory functions of cognitive processes such as covert speech soon became the focus of investigation.

Douglas (1972) and her colleagues found differences in impulse control, field dependence, and types of cognitive style between children with attention deficits and normals. When Camp (1977) compared samples of normal and aggressive boys on motor and verbal tasks, he found that aggressive boys had shorter response latencies and gave evidence of producing less covert speech. When interpreted under Luria and Vygotsky's theory, these findings suggested that children with attention deficits had not yet achieved the skills required in the second and third stages of the developmental model. The children were unable to control their own behavior using either covert speech or overt verbalizations. Consequently, there was much interest in developing therapeutic techniques designed to improve children's self-control skills by changing their thought processes.

In cognitive therapies, children's patterns of thought are believed to be changed by teaching them mediating responses designed to help them deal effectively with a variety of problem areas. For example, children

may be instructed to correctly identify a problem situation by describing it aloud, to avoid quick decisions by delaying responding for a period of time, or to think of several alternate solutions to a problem thus improving academic performance.

A common complaint about children with attention deficits is that they attempt to solve problems without a systematic, deliberative, problem-solving procedure. This results in poor academic performance and inadequate social skills (Sure & Spivack, 1972). Cognitive therapies often use direct problem-solving training to develop more organized and thoughtful methods of responding. Most of these use a five step verbal self-instructional (VSI) technique which encourages the child to (1) correctly identify a problem, (2) generate several alternative solutions, (3) to evaluate the probable consequences of each solution, (4) carry out the chosen solution and determine whether it produced the anticipated outcome, and (5) to say a self-reinforcing statement if an acceptable solution is arrived at or to make a coping statement if the solution is poor. The child must use these five steps sequentially to arrive at an answer for each academic or interpersonal problem presented during therapy.

The following transcript shows how a verbal self-instructional technique was used with an interpersonal problem.

Now, let's see. I have to find a way to go to the fair when my dad wants me to mow the lawn. Well, I could just go and not tell him or I could force my little sister to take care of the lawn. Hey, I know. Maybe my friend John will mow our lawn today if I promise to mow his for him next week. If I decided to just go to the fair without telling my dad or forced my sister to do the lawn, I could get into a lot of trouble. Things would probably work out much better if I

struck a bargain with John. I think that's what I'll do. (Therapist interjects that this is a good solution.) Good thing I went slow and did a good job. Things might work out O.K. now because I did a good job solving this problem.

It has been proposed by several writers that once the child learns effective VSI problem-solving skills a general "learning set" will result (D'Zurilla & Goldfried, 1971; Allan, Chinsky, Larcen, Lochman, & Selinger, 1976). This set should enable the child to apply these VSI techniques to many problems encountered in daily life.

When training the child to use efficient problem-solving techniques the therapist usually divides treatment into three stages. In the first stage, the therapist models the use of the new problem-solving strategy by reciting each of the five steps as he solves problems in front of the child. Next, the child learns to use the steps by saying each of them out loud while performing tasks similar to those completed by the therapist. In the final stage, the child first whispers the self-instructions and eventually learns to completely internalize them. At this point the child is able to think through each of the five steps and is no longer required to say them out loud while working.

It has been proposed that children who tend to respond quickly with many errors are actually capable of a more systematic and thoughtful response style, but that they see no reason to do so (Nelson, Finch, & Hooke, 1975). This hypothesis stated that impulsive children could be motivated to respond reflectively by maximizing their fear of failure. This could easily be accomplished with a response-cost contingent on their performance of tasks. Under this condition the children keep

their reinforcers by not making mistakes. Nelson, Finch, and Hooke reason that simple positive reinforcement, on the other hand, should maximize success-seeking behavior because the child is reinforced only after answering a problem correctly. The relative effects of the fear of failure versus the success-seeking components in controlling the responses of impulsive children were then assessed. After being administered Kagan's Matching Familiar Figures Test (MFF, Kagan, 1965) 40 emotionally disturbed boys were randomly assigned to a reinforcement, response-cost, or control group. The results of the retest given 2½ weeks later showed that while there was no change in the control group both the response cost and reinforcement conditions resulted in increased latencies and fewer errors. When the data was analyzed to reveal the comparative effectiveness of the two conditions on reflective and impulsive boys it was found that the response-cost was more successful with the impulsives on both measures. It was concluded that it was more effective to raise motivation by increasing the fear of failure in impulsive children than to appeal to a success-seeking component. They suggested that an optimal method of changing impulsive responding might combine cognitive training and/or modeling procedures with techniques designed to increase motivation.

Research

In a case study, Kendall and Finch (1976) were the first to use the combination of a response-cost and cognitive techniques when they treated a nine-year-old, impulsive boy previously diagnosed with

"overanxious reaction of childhood." Impulsiveness was partially determined on the basis of latency and error scores on the MFF (4.59 seconds mean latency and 9 errors). Prior psychological evaluations reportedly described the boy as an "aggressive, feisty, and uncooperative child." His classroom behavior was also extremely poor as the teacher described him as quarrelsome, immature, quick, and active. Kendall and Finch made several more observations of impulsive or over-active behavior during the two initial intake sessions. They stated that the boy "climbed in and out of his chair, rapidly talked about many topics, and changed the direction and purpose of his behavior without apparent reason."

During the two initial experimental observation periods Kendall and Finch noted three situations in which the child exhibited inappropriate and untimely changes in behavior. These behavioral "switches" were divided into the classes of (a) topics of conversation, (b) games played with, and (c) rules of play. The following three sessions were therapy sessions designed to treat each group of switches. This was done on a multiple-baseline treatment design, with a new class of switches treated each of the first three therapy sessions. The following three therapy sessions were meant to test for generalization and took place (a) in a different room, (b) with a different selection of toys in the room, and (c) with another therapist. Treatment consisted of verbal self-instructions, a response cost, and a cue card with "STOP, LISTEN, LOOK, and THINK before I answer" presented both in written and picture form. (Balkes, Stewart, and Kahana, 1968).

During the three initial therapy sessions the frequency of switches in each class of target behaviors was dramatically reduced as it became the focus of treatment. Generalization to each of the conditions present in sessions 6, 7, and 8 was excellent and no instances of behavioral switches were reported in a six month follow-up. Teacher reports of classroom behavior also improved radically after treatment.

Kendall and Finch observed that the social reinforcement of the relationship between the therapist and the child appeared to increase the frequency of positive behavior changes in addition to those specified as target behaviors. It was not clear though which was most important, the relationship's effects on treatment or the cognitive-behavioral treatment's encouragement of the relationship.

Two years later, Kendall and Finch (1978) reported another study which assessed the effects of a similar cognitive-behavioral treatment on ten children (mean age = 10.2 years) identified as impulsive. The subjects, who came from a clinic population of emotionally disturbed children, were labeled as impulsive if they had an error rate ≥ 7 and a mean latency < 8.5 seconds on the MFF. The children were also administered two self-report scales, the Impulsivity Scale (IS; Sutton-Smith & Rosen-Berg, 1959) and the Impulse Control Categorization Instrument (ICCI; Matsushima, 1964). The IS is a measure of impulsivity and the ICCI assesses self-control over behavior when provoked. The Impulsive Classroom Behavior Scale (ICBS; Weinreich, 1975), and the Locus of Conflict Scale (LOCS; Armentrout, 1971), were filled out by unit personnel and/or teachers to measure impulsive behaviors and determine

if the children showed an internalization or externalization of conflict.

Therapy consisted of six 20-minute sessions during which a series of conceptual and visual-motor problems were presented to the children. All tasks had to be completed using verbal self-instructions. Children were given ten tokens at the beginning of each treatment session which were subject to a response-cost contingent on the children's "accuracy."

In comparison to a control group the children in the treatment condition showed a significant increase in latency and a decrease in errors on the MFF as well as improved teacher ratings of impulsive classroom behavior. These treatment gains were still apparent in a two month follow-up. Neither of the two self-report or behavior-rating scales reflected a treatment effect. The fact that classroom behavior improved when there was no direct social-skills training is striking. Kendall and Finch concluded that this was evidence for generalization to the classroom.

One problem evident in both of Kendall and Finch's studies is that they relied heavily on the MFF both in the initial selection of subjects and in evaluating treatment effects. In the MFF, a twelve-item match-to-sample test, short latencies combined with many errors are used to define children's cognitive tempos as "impulsive." Recently this interpretation of test scores has been criticized and consequently the validity of the test was questioned.

In literature reviews, Block, Block, and Harrington (1975, 1976), found no clear evidence to support the interpretation that performance on the MFF predicted a generally reflective or impulsive cognitive

style. In their own study, Block, Block and Harrington (1974) evaluated latency and accuracy separately. They found only two significant correlations between personality characteristics and a short response latency. These were: (1) becomes strongly involved in what he/she does, and (2) is easily victimized by other children. In contrast, 32 personality attributes were significantly related to MFF errors. Accurate children appeared to be comparatively more competent, empathic, socially perceptive, brighter, more reasonable, and interpersonally attractive. The inaccurates, on the other hand, were found to be more rigid, lacking in self-confidence, less resourceful, and more susceptible to anxiety. These findings are in direct contradiction with Kagan's view that MFF response latency is an accurate basis for measuring a reflection-impulsivity dimension. Finally, fast/inaccurate children appeared to be more anxious, structure-seeking, rigid individuals, who were comparatively unpopular with their peers. They did not exhibit the traits characteristic of impulsive children as proposed by Kagan.

Kendall (in press) employed a reward menu and response-cost with a VSI treatment package similar to those used in his previous studies. Prizes on the reward menu were diverse, consisting of various school supplies, books, and stickers, and were presented to the children in a hierarchy which was meant to reflect the relative desirability of each item. The majority of these items were assigned values by having children rate them in terms of their appeal. Unfortunately, the children that did the ratings were not carefully matched with the children who actually used the reward menu. Also, several prizes were

arbitrarily added to the menu with no evaluations solicited from children. The study does not mention verifying the value of the prizes to the children by empirical methods. Means of determining prize values other than direct evaluations are often inaccurate. Dmitruk (1973) for example, has found no relationship between the material incentives adults think children like and the children's actual preferences. This may have been a confounding factor which could have lowered the effectiveness of the response cost.

An acceptable alternative to the construction of a reward menu might be to give the children a stack of coins at the beginning of each therapy session. Reinforcement with coins would help keep the relative value of the reinforcers to each other both known and more consistent over time.

In Kendall and Finch's group comparison study the control group was constructed with the goal of approximating all components present in the treatment condition except for the VSI training and the response-cost. The investigators stated: "disregarding the cognitive-behavioral treatment, similar conditions were achieved for both subject groups." It is essential for all treatment-outcome studies which attempt to compare the effectiveness of treatment and control groups that both groups be as similar as possible except for the variable of interest. Most likely, the present group-comparison study did not meet this requirement.

The first difficulty becomes apparent when one considers that the therapist undoubtedly expected different therapeutic benefits from the treatment and control conditions. Rosenthal (1966) has shown that

subjects' performance can be influenced by leading experimenters to expect certain effects. The experimenter can convey his presumptions or influence the subject's behavior by facial expressions and verbal cues (Johnson, 1970; Marwit, 1969; McFall & Shenkein, 1970), and probably also with posture, eye contact, and other "body language." It is particularly interesting to note that subjects who are most sensitive to experimenter expectancies are those who are high in need for approval (Smith & Flenning, 1971; Todd, 1971). When one considers that Block, Block and Harrington (1974) used the descriptors of "vulnerable, poorly defended, overly sensitive, and more lacking in self-confidence" in their characterization of children who responded inaccurately on the MFF, it seems especially probable that many of the children labeled as impulsive on the basis of MFF performance in Kendall and Finch's study were sensitive to expectancies.

It is clear that some of the skills learned during therapy generalized to the classroom setting in Kendall and Finch's group study. When they discussed this finding, the authors considered the effects of the types of training materials used during therapy. It was speculated that if the treatment sessions had used cognitive training and response-cost focused on interpersonal situations there would have been more likelihood of attaining generalization to real-life situations. Notice that the emphasis here is on the therapy materials and techniques per se. The therapeutic role of the child-therapist relationship (mentioned in Kendall and Finch's case study) is not commented on.

An idea advanced by Kendall and Finch was that the cognitive-behavioral treatment itself was a fostering agent for the

relationship between the child and therapist. VSI therapy, by its cooperative child-therapist tasks, encourages much interaction. Both parties work together, frequently exchanging ideas and providing each other with evaluative feedback during the problem-solving process. In view of this, it seems reasonable to assume that VSI cognitive-behavioral training provides much opportunity for a constructive child-therapist relationship to develop.

In Kendall and Finch's group comparison study the control group was exposed to the same tasks as in the treatment condition but the verbal self-instructions and response-cost were omitted. When studying the effects of the verbal self-instructions and response-cost in this manner, all important factors, including child-therapist relationships resulting in social reinforcement for the child, should be held equal between groups. This control procedure was not used and consequently the frequency of social reinforcement may have varied considerably between the experimental and control groups. It is especially probable that different social reinforcement schedules were present in the two conditions if the cognitive-behavioral treatment was a fostering agent for the developing relationship as speculated by Kendall and Finch.

After considering the social interaction within therapy it becomes much less surprising that gains from "academic" training generalize to classroom behavior. The therapeutic relationship developed in this cognitive-behavioral treatment gives the child a chance to learn socially acceptable behavior in a supportive and tolerant atmosphere. It is important to realize that many impulsive children may never have had the opportunity to work with an adult because their wild behavior

has always discouraged adult attention. Because of this the personal attention certain children receive in therapy could be an extremely powerful reinforcer.

If social reinforcement did, in fact, vary with Kendall and Finch's conditions, it became a confounding variable which could have helped to account for behavioral gains. The present study is an attempt to measure the contributions of social reinforcement to a cognitive-behavioral therapy by manipulating the child-therapist relationship. It was hypothesized that children who were taught in a way that fostered the development of constructive interpersonal exchanges would show more improvement on dependent measures than children who were instructed in a less personal manner.

Chapter 2

Method

Subjects

A total of 24 children (mean age = 9 years, 11 months) were chosen from 16 second through fifth grade classrooms in the Missoula, Montana Public School System. All children were enrolled in "normal" classes which had student/teacher ratios of approximately 20 to 1.

When referring children for this study, teachers and counselors were encouraged to select children on the basis of disruptive classroom behavior and attention deficits. Teachers also completed the Conners' Teacher Rating Scale (Conners, 1969) for each child. Eligibility for this study required a total score of at least 15 on the Hyperkinesis Index of the Conners scale. The mean score for those subsequently chosen was 19.71 (S.D. = 3.37). All but three of the subjects were male. One Native American, one black, and one Asian child (all males) were among those selected.

Tutors

Four female undergraduates from the University of Montana were chosen as tutors. All expressed a strong interest in teaching children and had some knowledge of experimental design from previous college course work.

Design

In this study a between groups design was used in which equal numbers of children were randomly assigned to: (1) a High Social Reinforcement (HSR) condition, (2) a Low Social Reinforcement (LSR) condition, or (3) a No-Contact Control (NCC) group. Treatment groups employed a cognitive-behavioral verbal self-instructional (VSI) procedure (Fisher, 1982. Appendix F) based on the work of Meichenbaum (1975). In this treatment, modeling, reinforcement contingencies, and a VSI "5 step" procedure (Padawer, Zupan, & Kendall, 1980) were used. The VSI steps were employed to teach children to: (1) correctly describe a problem, (2) consider possible alternative solutions, (3) stop and think about the probable solution, (4) give an answer and (5) say either a self-reinforcing or a coping statement depending on the accuracy of their answer. In the first tutoring session children were taught to solve a variety of "sequence problems" (Padawer, Zupan, & Kendall, 1980) using these steps. For the remaining sessions, classroom teachers assigned each child academic problems to work on with the tutors according to the child's needs.

In the HSR condition children were exposed to a tutor who tried to establish a friendly relationship and encourage short discussions about topics of personal interest to each child. These ranged from brief talks concerning household pets to conversations about the child's friends at school. Tutors were instructed to convey an attitude of personal interest in the child by, among other things, increasing eye contact, facing the child often, smiling frequently, occasionally touching the child, and speaking in a pleasing manner.

When teaching in the LSR condition, tutors were told to make instruction rather more impersonal and "mechanical" than it was for the HSR group. This required that they show less of the reinforcing, friendly, behaviors than they did for the HSR children. Children assigned to the treatment groups were taken from their classrooms during their regular school day to complete four individual tutoring sessions, each of which lasted approximately 40 minutes (\bar{X} = 41.64, S.D. = 5.8).

Classroom teachers were blind to the existence of high and low social reinforcement conditions.

All dependent measures that were to be recorded when the children were in the classroom were taken for twenty minutes immediately before and after the first and last tutoring sessions. The other dependent and independent variables were recorded during the last thirty minutes of the sessions.

Procedures

After the initial subject selection parent permission forms (Appendix E) were sent to each child's home. Soon after the forms were returned the children's teachers were contacted regarding scheduling of tutoring sessions and/or observation periods.

Prior to the collection of any data classroom observers sat in the children's classes at least for one hour. The observers recorded "practice data" during this time and had the opportunity to identify any unexpected problems in each particular classroom. These initial observations also helped to insure the non-reactivity of the measures by allowing children to acclimate to the presence of an observer. After

practice observations were completed the first in-classroom data was collected for 20 minutes. This observation was immediately followed by the first tutoring session and then by another 20 minute classroom observation. All further meetings took place on subsequent days with a mean number of 12 (S.D. = 7.94) days between the first and last session. The second and third tutoring sessions took place with in-session observations only while the fourth tutoring session was preceded and followed by classroom observations in the same manner as the first session (see Figure 1). Children in the control group were observed in their classrooms during the same time periods that children in treatment conditions were observed.

Day 1.	Classroom Observation Number One	Tutoring Session Number One	Classroom Observation Number two
Day 2.		Tutoring Session Number two	
Day 3.		Tutoring Session Number Three	
Day 4.	Classroom Observation Number Three	Tutoring Session Number Four	Classroom Observations Number Four

Figure 1. Schedule of classroom observations and tutoring sessions for treatment groups.

Observers were uninformed as to the purpose and design of this experiment. A questionnaire distributed to observers just after the completion of this study revealed that although some believed that

certain children were treated "with more interest" in the tutoring sessions, all remained unaware of the purpose of the experiment. Observers who watched children in the classroom also did not know if the child they were observing was in a treatment or control condition. This was accomplished by having the tutor escort the classroom observer to and from a lounge area before and after the 40 minute period set aside for tutoring. In this way, the observer never saw if the child left the classroom. (See "Independent Variables" and "Dependent Variables" sections for explanations of all other data collecting procedures).

Tutors were trained to use VSI techniques the response-cost, and to model high and low social reinforcement behavior during approximately four hours of training.

Independent Variables

The concept of rapport encompasses a number of nonspecific variables which have been neither well defined nor explored by previous research. Consequently, the present specification of this familiar construct is not an attempt to introduce previously unrecognized variables, but is instead intended to operationalize the child-tutor relationship for the experimental requirements of this study.

The independent variable, high versus low social reinforcement from the tutors, was divided into the seven sub-classes of: (1) Head Orientation, (2) Eye Contact, (3) Verbal Reinforcement/Approval, (4) Facial Expression, (5) Physical Contact, (6) Positive Verbal Content, and (7) Pleasantness of Vocal Expressions. All categories correspond to behavior that has been shown to be reinforcing to children or

interpreted as reflecting approval (e.g. Allen, 1967; Brannigan & Reimondi, 1979; Curry, 1960; James, 1932; Layne, 1978; Mehrabian, 1969, 1970; Mehrabian & Ksionsky, 1972; Nachshon & Wapner, 1967; Spence, 1967).

A HSR tutoring session required the tutor to exhibit positive eye contact, frequent verbal reinforcement, pleasant facial expressions, physical contact, positive verbal content, pleasant vocal expressions, and a head orientation in the direction of the child. LSR sessions were characterized by less of the socially reinforcing behaviors specified for the HSR condition. It should be stressed that the LSR condition was not intended to be uncomfortable or to convey a message to the child that he/she was being punished. The goal of this condition was simply to present the child with a detached and matter-of-fact tutor who provided a minimum of social reinforcement.

The following criteria have been selected and subsequently modified from those proposed by Mehrabian (1969) as being representative of both non-verbal interactions and subtle aspects of verbal behavior.

Head Orientation

Head Orientation refers to the position of the tutor's head in relation to the child. Tutor-child Head Orientation was considered reinforcing if the tutor's head directly faced the child for more than one second.

Physical Contact

Physical Contact involves bodily contact between the tutor and the child, as is the case in shaking hands, guiding the child's hand to learn a skill, or by a pat on the back.

Eye Contact

The child and tutor were scored as making Eye Contact only when both were looking at each other's face at the same time for one second or longer. Eye Contact is considered to be a reinforcing behavior.

Facial Expression

All positive expressions, such as smiles, were considered to be reinforcing. A tutor's expression was regarded as reinforcing if it occurred for one second or longer and was seen by the child.

Verbal Reinforcement/Approval

Verbal Reinforcement/Approval included any positive statement (e.g. good, fine, that's right, etc.) which was meant to inform the child that he/she had performed a task correctly. The distinction between Verbal Approval and Verbal Reinforcement was made on the basis of the tutor's tone of voice. Verbal Approval was defined as approval given in a flat, monotone fashion with little expressed affect. Verbal Reinforcement was given in a much more enthusiastic tone of voice.

Pleasantness of Vocal Expressions

Vocal expressions were rated on the degree of positive versus negative quality that was inferred from the paralinguistic features alone, based on the following scale (Mehrabian, 1972).

- 4: Extreme enthusiasm, pleasure, amusement, or sympathetic interest in the addressee.
- 3: Noticeable amount of enthusiasm, pleasure, amusement, or sympathetic interest in the addressee.
- 2: Neither positive nor negative quality, or a balance between instances of positive and negative quality.
- 1: Sarcasm, annoyance, boredom, or suspicion (noticeable).
- 0: Extreme sarcasm, annoyance, boredom, or suspicion.

The tutors tried to achieve ratings of "2" on this scale in the LSR condition.

Positive Verbal Content

Positive Verbal Content was defined as the extent to which the tutor's words were intended to convey a positive feeling to the child. This ranges from little suggestion of personal interest in the child (as appropriate in the LSR condition) to phrases indicating strong interest in and liking of the child (as appropriate in the HSR condition).

Positive Verbal Content was based on the scale given below (Mehrabian, 1972).

- 0: No verbal response, or brief replies to the child's statements.
- 1: Verbal references to the setting in which the interaction occurs, showing some interest or approval.
- 2: Verbal references to the setting with moderate to strong interest or approval.
- 3: Questions directed to the child that are of a personal nature, such as what he/she is feeling like or where he/she is from. Verbal immediacy indicators such as us or we, which suggest common experiences with the addressee, are helpful in assigning statements to this level. Questions and comments in this category indicate a strong interest in the child.

Head Orientation, Eye Contact, Facial Expression, and Physical Contact were all directly observed by judges who used a standard "In-Session Behavior Form" (Appendix A). Observations of independent and dependent non-verbal behaviors during the tutoring sessions alternated on a 10 second basis according to the following schedule (See Figure 2).

10" Observe independent variables	10" Record independent variables	10" Observe dependent variables	10" Record dependent variables
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Figure 2. Schedule for behavioral observations and data recording during tutoring sessions.

Observers of all variables generally timed recording intervals with a tape recorder and earphone that played audio cues to signal different observation periods. Directly observed variables were recorded either 1 or 0 for a given 10 second period. No double credit was scored for a behavior that happened twice in a particular interval.

All verbal independent variables were scored on the basis of tape recordings made during each tutoring session. Because of tape recorder malfunctions, observer errors, and poor quality sound, scorable recordings were available for only 45 (70%) of the 64 tutoring sessions. Verbal Reinforcement/Approval were scored either 1 or 0 while Positive Verbal Content and Pleasantness of Vocal Expressions were scored on the basis of the given rating scales. Ratings of these behaviors were obtained on a 15 second observe, 15 second record basis using a standard Checklist of Verbal Behaviors (Appendix B).

Dependent Variables

Dependent variables, recorded on the in-session and in-classroom behavior forms (Appendices A and C), were of six types: in-classroom behavioral observations, Pleasantness of the Children's Vocal Expressions During Tutoring Sessions, Attending Behavior During Tutoring Sessions, Performance of Tasks, Latency in Step Number Three, and Head Orientation.

In-Classroom Behavioral Observations

Teachers were asked to plan similar academically-orientated activities for the class as a whole during all classroom observation periods. Classroom observations were done by judges who sat near the back of the room in an effort to remain relatively unobtrusive. Classroom behaviors (Mehrabian, 1972) were scored on a 10-second observe, 10-second record basis according to the following categories.

Category Definitions:

1. Out of Seat Any movement of the child from his chair when not permitted or requested by the teacher. To be considered in his chair, some or all of the child's buttocks must be on some or all of the seat of the chair. If not, the child is scored as out-of-seat even though he may be at his desk standing or may be looking under his chair.
2. Vocalization or Making Noise Any unpermitted audible sound emanating from the child's mouth or any sound which the child creates that is unrelated to the assignment he has been given. For instance, drumming his pencil on the desk when he should be working in his workbook, or whistling while attending to a group lecture.

3. Disturbing Others
Child talks to, pushes, bumps, nudges, intrudes upon, or otherwise disrupts the activities of others when uninvited or without the permission of the teacher such that the other person orients toward the child. This category also includes any act of aggression, such as punching, hitting, slapping, kicking, or otherwise physically contacting another child.
4. Playing
Child manipulates, "fiddles with," or otherwise uses his hands to play with his own or community property when such behavior is not part of or is incompatible with the current task assignment. For instances, drumming pencil against desk, playing with pencil box, throwing erasers, playing with one's own fingers, etc.
5. Off-Task
If, during any time cell, the child has spent the majority of the interval not doing what was part of the assigned task. For example, a child may sit and daydream during a workbook assignment.

Also, score this category if the child engages in any of the above 5 categories for the majority of the time cell. Thus, if the child plays with his pencil, is out of his chair visiting a friend, or is bothering his neighbor and this occupies the majority of the time cell, you should mark the following categories: Playing, Out-of-Seat, Disturbing Others, and Off-Task. However, if the child is standing at his desk but is doing the assigned work, then mark only the "Out-of-Seat" category.

Pleasantness of the Children's Vocal Expressions During Tutoring Sessions

The children's vocal expressions were rated in the same manner as the tutors' during the sessions.

Attending Behavior During Tutoring Sessions

Non-Attending behavior was any behavior incompatible with learning the task at hand. This included the categories of Playing and Out-Of-Seat. In order for a child to be scored as "Non-Attending" he/she must have exhibited one or more of these behaviors which seriously interfered with attending for the majority of the 10-second interval.

Performance of Tasks

The total number of nickels not lost by a response-cost during tutoring was recorded after each session. Independent judges also rated the child on his/her performance of tasks during the tutoring sessions.

Latency in Step Number Three

The number of seconds a child paused between a phrase such as "step number three says I should stop and think about the answer" and the child's answer itself was scored from tape recordings of tutoring sessions. Longer latencies are assumed to be characteristic of more reflective response styles.

Head Orientation

The children's head orientation was scored in the same manner as the tutors'.

General Classroom Behavior

The General behavior of all the children in the classrooms was scored for 10 seconds every five minutes during all classroom observations. Ratings were done according to the scale: 0=No class

disruptions, 1=Slightly disruptive class, 2=Moderately disruptive class, 3=Seriously disruptive class.

Reliability Checks on Observations of Children's Performance of Tasks and the Use of the Response-Cost

Judges of the children's performance in the tutoring sessions and of the tutors' use of the response-cost, (which a tutor could enact when a child made an error) were first trained to score audio tapes. During this time, observers rated a child's performance using the "five steps" on a behavior recording form (appendix D) according to the following categories: (1) Too Fast. The child did not spend enough time on a particular VSI step to do a good job or seemed to be rushing in some way. (2) Wrong Answer. The child gave the wrong answer. (3) Skipped a Step. The child skipped a step. (4) Latency to Step Number Three. The number of seconds a child paused during step number three was timed with a stopwatch and then recorded. The tutors' behavior was scored as to when and why they used the response-cost. This observation-training procedure took approximately five hours for each of the two judges.

Observer-Criteria Reliabilities

Observer-criteria measures were designed to check how closely observers agreed with the principal investigator in scoring the children's and tutors' behaviors. After being trained, judges were required to rate 40 minutes of sample audio tape recordings which had previously been scored by the principal investigator. Separate reliability indices were computed for judging the observers' accuracy in

rating the children's and tutors' behavior. The first index was determined by dividing the number of agreements between the judge's reports of the tutor's behavior and the previously scored audio tapes by the total number of problems completed by the child. Similarly, the second reliability index was computed by dividing the number of agreements between the judge's reports of the child's behavior and the scored tapes by the total number of problems the child completed. (In both cases, simply agreements divided by the total number of problems). In order for a rating of Latency in Step Number Three to be considered correct it had to be within five seconds of that given in the key.

During the initial observer-criteria reliability checks all reliability coefficients were 100 percent. A reliability check of a different pre-scored tape recording was also completed once in the middle of the experiment for judge number two after she wondered about the scoring of some of the tutors' behavior. Her reliabilities on this check ranged from 92.59 to 100 percent correct. Finally, reliability checks were completed at the end of the experiment to check for changing observer criteria. Agreements at this time ranged from 88.88 to 100 percent correct. Table 1 presents mean reliabilities for both observers over all observations.

Inter-Observer Reliabilities

Inter-observer reliabilities were computed for 100 percent of the audible recordings of tutoring sessions. Reliabilities were determined by dividing the number of agreements between both observers by the total number of problems completed by the child. Observer number one achieved

Table 1

Mean observer-criteria percent agreements for observers' scoring children's performance of tasks and of the tutors' accuracy in using the response-cost.

	<u>VSI Step</u>				
	1	2	3	4	5
Children's Performance of Tasks	97.70	95.39	100.0	97.70	98.85
Tutors' Accuracy in Using the Response-Cost	98.85	100.0	100.0	100.0	99.43

reliability scores which ranged from 93.56 to 99.75 percent over all sessions while observer number two received scores from 90.22 to 99.78 percent. Table 2 presents the total inter-observer reliability scores averaged across both observers.

Table 2

Mean inter-observer percent agreements for observers' scoring children's performance of tasks and the tutors' accuracy in using the response-cost.

	<u>VSI Step</u>				
	1	2	3	4	5
Children's Performance of Tasks	94.83	95.79	93.89	96.01	95.55
Tutors' Accuracy in Using the Response-Cost	98.59	98.83	99.30	97.42	99.41

Tutor-Observer Reliabilities

Tutor-observer reliability checks were conducted on all scorable audio tape recordings to determine the tutors' accuracy in using the response-cost. Reliability scores were computed for each session by subtracting the number of times an observer thought the tutor made a mistake in the use of a response-cost at each step from the total number of problems completed during that session. The result was divided by the total number of problems completed to give reliability data for individual sessions. Table 3 gives the resulting tutor-observer reliability check data (weighted mean scores averaged over all tutors and observers) for each of the 5 VSI steps.

Table 3

Tutor-observer reliabilities of the tutors' use of the response-cost.

	<u>VSI Step</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Reliability	97.06	96.64	95.59	97.48	96.22

Tutor-observer reliability check data was not completed for individual tutors because it was apparent that all showed approximately the same level of reliability. The averages of all tutor-observer reliability checks are therefore considered as representative of the performance of all tutors.

Reliability Checks on Observations of Tape-Recorded Independent
Reinforcing Behaviors and Pleasantness of the Children's Vocal
Expressions

Inter-Observer Reliabilities

Two observers were trained to use the scoring criteria for both the independent verbal behaviors and for the Pleasantness of the Children's Vocal Expressions. This procedure involved approximately 3 hours of training for each observer. After observer training was completed 4 tapes were chosen at random to represent each tutor. Two of these had been recorded during the HSR condition and 2 were made during the LSR condition. This resulted in a total of 16 tapes, evenly divided among tutors and treatments.

Observers rated all 16 tapes on a 15 second observe, 15 second record basis. Both observers listened to tapes at the same time while the principal investigator signaled the beginning of each 15 second interval. While scoring the tapes observers sat so they could not see each other's ratings.

Inter-observer reliability checks were computed for all 16 tapes. For each tape, one judge was randomly designated as the observer while the other became the reliability checker. Reliabilities were computed by subtracting the number of ratings in each category not exactly matching between each of the two judges from the total number of intervals scored. The results were divided by the total number of intervals rated in each tape to give reliability coefficients. Table 4 presents weighted mean scores and ranges for the reliability of observers both separately and combined.

Table 4

Inter-observer percent agreements of independent verbal reinforcing behaviors and Pleasantness of the Children's Vocal Expressions

	Observer "A" Mean Scores & Ranges	Observer "B" Mean Scores & Ranges	Mean Inter- Observer Reliabilities
Verbal Reinforcement (Tutor)	96.00 (90-100)	95.00 (90-100)	96.00
Verbal Approval (Tutor)	91.00 (85-98)	90.00 (79-93)	91.00
Positive Verbal Content (Tutor)	85.00 (76-93)	87.00 (77-93)	86.00
Pleasantness of Vocal Expressions (Tutor)	72.00 (56-85)	73.00 (59-93)	73.00
Pleasantness of Vocal Expressions (Child)	79.00 (66-93)	76.00 (60-86)	78.00

Reliability Checks on Directly Observed Variables

Observer-Criteria Reliabilities

In-classroom and in-session observers were trained with three pre-scored 20-minute audio-video recordings of children in their regular classrooms and two recordings made during a VSI treatment. The video tapes of children in the classroom were of second-graders working in three different work situations. The first tape was of children working independently on math and reading assignments. The second showed children working with the teacher in a small group situation and the

third was of the entire class watching a presentation by the teacher. The two, 20-minute video tapes of a child being given VSI training were of the principal investigator teaching a fourth grade child. Examples of high and low social reinforcement were demonstrated throughout these tutoring recordings to give observers experience as similar as possible to the actual observations.

A total of 15 undergraduates were trained to score directly observed behaviors which were later observed in the tutoring sessions and in the classrooms. After approximately 12 hours of initial training, each observer was required to achieve observer-criteria reliabilities of 80 percent or greater in each category of behavior on two consecutive days. Observers were also required to re-score all video tapes throughout the experiment to control for changing observer-criteria. Observers rated an average (mean) of 21 minutes of tutoring recordings and 26 minutes of classroom recordings each week of the study.

Reliability scores were determined by dividing the number of agreements between the observers' scores and the previously constructed keys for each tape by the total number of ten second intervals scored. Failure to achieve 80 percent reliability occurred four times for the tutoring tapes and eleven times for the classroom tapes. When this happened, the appropriate observer was re-trained to original reliability requirements before being allowed to again do actual observations in the schools. Table 5 presents mean observer-criteria reliabilities and ranges of observers' mean scores for each category of

Inter-Observer Reliabilities

Inter-observer reliability checks on directly observed behaviors were performed on 30 percent of actual in-session observations and on 40 percent of in-classroom observations. These checks were done on a random basis by a second observer who served as a reliability checker. Reliabilities were computed by dividing the number of observer agreements by the total number of ten-second intervals scored. Observers were required to achieve inter-rater reliabilities of 80 percent or greater. This criterion was not obtained once in the tutoring observations and three times for the in-classroom observations. After these four instances, observers were re-trained to original requirements before they completed more actual observations. Table 7 presents mean inter-observer reliabilities and ranges of individual observer's mean scores for in-classroom variables. Table 8 gives similar reliabilities and ranges of observer's mean scores for in-session variables.

Table 7

Mean inter-observer percent agreements and ranges of individual observer's mean scores for in-classroom variables

Behavior Category	Mean Reliability	Ranges of Observers' Mean Scores
Out of Seat	98.03	96.00-100.0
Vocalization	94.94	84.27-100.0
Disturbing Others	98.47	96.15-100.0
Play	92.21	85.71-100.0
Off-Task	94.00	84.86-100.0

Table 8

Mean inter-observer percent agreements and ranges of individual observer's mean scores for in-session variables

Behavior Category	Mean Reliability	Ranges of Observers' Mean Scores
Eye Contact	98.33	96.89-100.0
Facial Expression (Tutor)	98.71	97.73-100.0
Head Orientation (Tutor)	91.33	84.44-100.0
Physical Contact (Tutor)	100.00	100.00-100.0
Attending (Child)	97.84	95.43-100.0
Head Orientation (Child)	93.64	80.00-100.0

General Classroom Rating Inter-Observer Correlations

A Pearson product-moment correlation coefficient of .69 was computed between observers' and reliability checkers' ratings of general classroom behavior.

Chapter 3

RESULTS

Independent Variables

Table 9 presents mean ratings on the appropriate Likert-type scale (for "Positive Verbal Content" and "Pleasantness of Vocal Expressions") and the mean percentage of intervals scored in each behavior category (for all other variables) for independent variables. Resulting F ratios and between groups probabilities are also provided and are computed with a repeated measures analysis of variance. Results show significant differences on all measures in the direction of more social reinforcement for the HSR treatment group.

Dependent Variables

In-Session Measures

Repeated measures analyses of variance were performed on in-session dependent variables comparing treatment groups, tutors, and tutoring sessions (groups x tutors x sessions interactions). Of particular interest were the groups comparisons and a contrast between behavior in the first and last sessions.

Table 10 presents data pertaining to the effects of treatment condition. It gives mean scores of treatment groups, the between groups F ratio, and probability associated with each comparison. While no significant differences are indicated, all mean scores except for "Child's Mistakes per Step According to the Observer" and "Nickels Lost

Table 9

Mean ratings, percent occurrence, F ratios, between groups probabilities for independent variables. All analyses have 8 degrees of freedom.

Independent Variable	HSR Condition (Mean)	LSR Condition (Mean)	F Ratio	Between Groups Probability
Positive Verbal Content (Mean rating. Higher scores indicate more positive verbal content.)	1.16	.87	10.98	.01*
Pleasantness of Vocal Expressions. (Mean rating. Higher scores indicate more pleasant vocal expressions.)	2.21	1.97	5.48	.045*
Verbal Reinforcement Divided by Verbal Approval. (Percent occurrence. Larger ratios indicate more social reinforcement.)	.42	.10	11.76	.009**
Physical Contact. (Percent occurrence.)	.56	.00	16.27	.004**
Head Orientation (Percent occurrence.)	41.49	15.55	17.36	.003**
Facial Expression (Percent occurrence.)	12.46	.98	12.09	.008**
Eye Contact (Percent occurrence.)	16.98	2.90	24.81	.001**

Table 10

Mean scores for treatment groups over all sessions, F ratio, and between groups (main effects) probability associated with in-session dependent variables. All analyses have 8 degrees of freedom.

Dependent In-Session Variables	Overall Mean of High Social Reinforcement Condition	Overall Mean of Low Social Reinforcement Condition	F Ratio	Probability
Attending (Percent occurrence)	98.28	97.11	.52	.50 ^{ns}
Nickels Lost Each Session (Mean number)	2.06	1.88	.21	.67 ^{ns}
Child's Head Orientation (Percent occurrence)	18.41	17.18	.03	.85 ^{ns}
Mean Seconds Latency in Step Number 3	63.24	49.19	1.35	.28 ^{ns}
Pleasantness of Children's Vocal Expressions (Mean rating. Higher scores indicate more pleasant expressions.)	2.06	1.94	.66	.56 ^{ns}
Child's Mistakes per Step According to the Observer.	.06	.05	.03	.85 ^{ns}

Table 11

Mean scores computed for treatment groups
in the first and last sessions

Dependent In-Session Variables	Means of High Social Reinforcement Condition		Means of Low Social Reinforcement Condition	
	Session 1	Session 4	Session 1	Session 4
Attending (Percent occurrence)	97.93	98.85	99.14	94.99
Nickels Lost per Session (Mean number)	2.12	1.37	2.12	1.62
Child's Head Orientation (Percent occurrence)	14.56	19.60	17.18	17.42
Mean Seconds Latency in Step Number 3	37.71	123.99	39.20	72.08

Each Session" show slightly better behavior by children in the HSR Group.

Table 12 gives the data for Attending Behavior in a significant ($F=3.23$, $df=24$, $P<.04$) groups x sessions interaction. Results indicate Attending varied over sessions for LSR children to a much greater extent than for those in the HSR group.

Table 12

Mean percentile scores for attending in treatment groups over all sessions

Treatment Group	Session 1	Session 2	Session 3	Session 4
Low Social Reinforcement Group (Percent of cells scored "Attending".)	99.15	95.45	98.85	94.99
High Social Reinforcement Group (Percent of cells scored "Attending".)	97.93	98.88	97.46	98.86

Table 13 presents the mean number of times a response-cost was used per session by each of the tutors. This analysis demonstrated significant results ($F=5.98$, $df=8$, $p < .02$) with one tutor using a response-cost less frequently than the other tutors. A Newman-Keuls multiple comparisons procedure, however, showed no significant differences between any individual pair of scores.

Table 13

Mean number of nickels taken from a child per session by each tutor.

	Tutor 1	Tutor 2	Tutor 3	Tutor 4
Mean Number of Nickels Taken	1.81	3.12	.69	2.25

In-Classroom Measures

For each dependent in-classroom measure this study used two separate analyses of variance to determine pre-post changes. For the first of these, scores for classroom observations 1 and 2 were combined and designated as "pre" observations while measures taken in observations 3 and 4 were considered to be "post." This comparison looked at relatively long term changes and took into account much behavior. Thus, it may have resulted in a relatively stable measure. The second group of ANOVAs examined observations 1 and 3 (pre) in relation to observations 2 and 4 (post). In this way, any short-term changes in behavior occurring immediately after an individual tutoring session might be examined. Finally, in order to provide a measure that was not contaminated by a tutoring session before a "pre" observation or after a "post" observation, data from observation 1 was compared to data in observation 4. This was accomplished with a Newman-Keuls multiple comparisons procedure.

Two unexpected confounds make it difficult to draw conclusions from the categories "Play" and "Out of Seat." From behavior recording sheets and interviews with observers, it was estimated that 50 percent of playing behavior in tutoring groups during classroom observations 2 and 4 involved playing with nickels given as rewards. Also, during these same observation periods children tended to leave their seats in anticipation of recess. Because of these problems, unusually high percentages of "Play" and "Out of Seat" behavior occurred in these classroom observations. The data presented for these categories of behavior consequently should be regarded with caution.

Table 14 presents data for treatment groups when comparing observations 1 and 2 against 3 and 4. Mean scores, the appropriate F ratio, and the associated probability are included for each group x pre-post interaction. Although not a dependent measure, the category of "General Classroom Behavior" is included in this table, and the following two tables for comparison with other variables. Children in the LSR condition showed slightly less undesirable behavior than the HSR children during observations 1 and 2. Similarly, on four of the five dependent variables LSR children showed somewhat better behavior than controls on "pre" measures. On dependent measures recorded in observations 3 and 4, HSR subjects demonstrated slightly less undesirable behavior than the LSR children in four of the five categories.

A post-hoc Newman-Keuls multiple comparisons procedure showed a significant difference between the HSR group's score for Vocalization ($p < .05$, 21 df) in observations 3 and 4 and both of the control groups' scores. Although a strong trend of less undesirable behavior on the part of HSR children was evident for the category of "Out of Seat" a Newman-Keuls test showed no significant differences.

Table 15 gives data comparing observations 1 and 3 to observations 2 and 4 on dependent in-classroom variables. Mean score for the HSR, LSR, and NCC groups are given along with the appropriate F ratio and probability. No trends or significant between groups differences are apparent.

Table 14

Mean percent of cells scored in each category for classroom observations 1 and 2 (pre) compared to the mean of observations 3 and 4 (post). The corresponding F ratio and probability for each group x pre-post interaction are provided.
All analyses have 21 degrees of freedom.

Dependent In-Classroom Variables	Means of Observations 1 and 2 for HSR, LSR, and NCC Groups			Means of Observations 3 and 4 for HSR, LSR, and NCC Groups			F Ratio	Probability
	High	Low	Cont.	High	Low	Cont.		
Vocalization	13.16	7.82	15.38	4.88	10.80	15.99	3.0	.07 ^{ns}
Play	19.32	14.57	18.11	21.89	15.21	14.17	.24	.79 ^{ns}
Off-Task	26.75	24.61	18.87	22.74	23.29	16.28	.02	.98 ^{ns}
Disturbing Others	3.32	.67	2.52	1.37	3.81	2.44	1.59	.23 ^{ns}
Out of Seat	10.54	6.14	11.73	3.71	11.47	8.30	3.05	.07 ^{ns}
General Class- room Behavior (Higher scores indicate more disruptive behavior)	.64	.71	.67	.55	.87	.47	.97	.60 ^{ns}

Table 15

Mean percent of cells scored in each category for classroom observations 1 and 3 (pre) compared to the mean of observations 2 and 4 (post). The corresponding F ratio and probability for each group x pre-post interaction are provided. All analyses have 21 degrees of freedom.

Dependent In-Classroom Variables	Means of Observations 1 and 3 for HSR, LSR, and NCC Groups			Means of Observations 2 and 4 for HSR, LSR, and NCC Groups			F Ratio	Probability
	High	Low	Cont.	High	Low	Cont.		
Vocalization	7.83	7.31	15.86	10.20	11.31	15.51	.79	.53 ^{ns}
Play	19.32	16.91	20.08	22.11	12.86	12.20	1.77	.19 ^{ns}
Off-Task	23.36	22.25	19.24	26.12	25.65	15.90	.77	.52 ^{ns}
Disturbing Others	2.40	.80	1.23	2.28	3.69	3.73	1.82	.18 ^{ns}
Out of Seat	1.88	4.90	5.82	12.37	12.72	14.21	.14	.87 ^{ns}
General Class- room Behavior (Higher scores indicate more disruptive behavior)	.55	.69	.58	.65	.90	.57	.95	.59 ^{ns}

Table 16 presents data obtained in observations 1 and 4. Mean scores (in percentages) for HSR, LSR, and NCC groups are provided for all measures. Newman-Keuls multiple comparisons showed no significant differences between observations made during the first and last classroom periods.

Table 16

Mean percent of cells scored in each category for classroom observations 1 and 4

Dependent In-Classroom Measures	Mean of Observation 1 for HSR, LSR, and NCC Groups			Mean of Observation 4 for HSR, LSR, and NCC Groups		
	High	Low	Cont.	High	Low	Cont.
Vocalization	11.40	8.28	13.55	5.49	15.27	13.81
Play	16.05	19.46	19.47	21.63	16.04	7.66
Off-Task	25.14	29.17	19.19	23.89	31.25	13.25
Disturbing Others	3.35	.93	1.17	1.29	6.95	3.59
Out of Seat	2.92	8.10	8.40	6.59	21.25	13.33
General Class- room Behavior	.47	.75	.59	.48	1.13	.39

Discussion

This experiment demonstrates that it is possible to manipulate non-contingent social reinforcement in a therapeutic situation. Furthermore, the results of this study provide limited support for the hypothesis that the child-therapist relationship contributes to behavioral gains.

The data recorded for the independent variables showed that there were significant and, with the exception of "Positive Verbal Content," substantial between groups differences on all measures. Although the between groups comparison is significant for the category of "Positive Verbal Content," the magnitude of the difference appears to be relatively small. It is possible that the tutors were not trained well enough in this area to show large differences between treatment groups. An examination of individual tutor's scores shows that although there was some variation between tutors, all showed differences in the appropriate directions on all independent measures. One can conclude that social reinforcement differed between treatment groups with respect to the independent variables.

While dependent measures taken during tutoring sessions show no significant between groups differences, they do indicate a trend of superior behavior of HSR children. In terms of main effects all measures except "Nickels Lost Each Session" and "Child's Mistakes according to the Observer" show HSR children tended to perform slightly better than children in the LSR group. Also, all measures in Session 4 show a tendency toward less undesirable behavior on the part of HSR

children. These between group differences however, are usually small. This fact, along with the relatively few subjects used and the short duration of treatment, undoubtedly contributed to the absence of significant results. These slight differences may also be partly explained by the small within groups variations on all measures. Once a child is in a one-to-one situation the tutor's general behavior appears to control most of the child's observable behavior regardless of the degree of social reinforcement. It may be that measures looking at cognitive changes would have therefore been more appropriate indicators of change during the tutoring sessions. These measures would serve to highlight changes in such things as self concept, security with adults, and self confidence in doing schoolwork.

The significant groups x sessions interaction for attending in tutoring is difficult to explain. The HSR children show attending behavior just a little more than one percent more often than do children in the other treatment group. Their scores, however, vary much less over sessions than do the scores for the LSR group. One could speculate that social reinforcement stimulated the children's interest in learning tasks and thus resulted in more consistent attending. This explanation, however, does not account for different amounts of attending behavior in successive tutoring sessions. It is also possible that children in both treatment groups were, by chance, given different kinds of tasks to work on. A detailed examination of the types of work given to the children by the teachers would answer this question.

It was apparent that all tutors did not use the response-cost with the same frequency. Since tutor-observer reliabilities ranged from

95.59 to 97.48 percent correct for each of the five VSI steps it is believed that this discrepancy is mainly due to differences in children's performance.

Over all measures of classroom behavior, only one (Vocalization or Making Noise in observations 1 and 2 vs. 3 and 4) showed significant results. There were, however, apparent patterns of nonsignificant between groups differences. While the following discussion does recognize that the majority of results are nonsignificant, it does attempt to draw some conclusions from what are considered to be consistently occurring trends in difference scores.

In-classroom dependent post measures showed trends indicating significant or slightly superior classroom behavior by HSR children over LSR and NCC groups. During observations 3 and 4, all but one of the dependent classroom behavior measures show that HSR children had trends of fewer undesirable behaviors than did LSR children. It must be noted, however, that the HSR children performed better than the controls on only three of the five measures during observations 3 and 4. Finally, a post-hoc Newman-Keuls multiple comparisons procedure revealed that HSR children exhibited significantly less inappropriate "Vocalization of Making Noise" behavior on the post measure than did NCC subjects both before and after tutoring.

The fact that the children in the control group often displayed more appropriate behavior in the categories of "Play" and "Off-Task" might be partially explained by noting that approximately half of the play behavior for the treatment groups during observation 4 appeared to

involve playing with the nickels given as rewards. This play behavior may then have encouraged children to be off-task.

During observations 3 and 4 the general behavior of all children in the classroom was rated. A small nonsignificant tendency was found for more disruptive behavior in classes of LSR children than in the other two groups. Whether this small difference indicates that the disruptive behavior of non-experimental children influences experimental children's behavior or vice versa is unknown.

A comparison of classroom behavior during observations 1 and 3 against behavior during observations 2 and 4 indicates no significant differences or trends of superior behavior in any experimental group. The ratings of the classroom's general behavior again show a slight nonsignificant tendency for more disruptiveness in the classes of LSR children in relation to the classes of both other experimental groups during "post" measures.

Data collected in observations 1 and 4 indicated that while during "pre" measures all groups showed roughly equivalent amounts of undesirable behavior, "post" measures showed poorer behavior from LSR children in relation to both other groups. The one exception to this is the category of "Play" which was possibly contaminated by the children playing with their nickels. Similar, but much less marked differences exist when comparing the HSR condition to the control group. Excluding the category of "Play," three of the four measures show better behavior on the part of HSR children compared to controls. Finally, while LSR children tended to receive roughly equivalent scores on classroom behaviors during observation 1, all measures collected in observation 4

showed nonsignificant differences in the direction of superior behavior from controls in relation to LSR children.

It is interesting to observe that the greater the time span between pre-post classroom measures, the poorer LSR children seem to behave in relation to other groups. This observation is tentative because it is not wholly based on significant results but instead on patterns of difference scores. Such an observation might suggest two things. First, it might indicate that behavior change actually occurred because a logical pattern of behavioral improvement seems to be evident. One would expect from the original hypothesis that greater change would take place over time as the children developed constructive relationships with their tutors. Secondly, it would point to the need for more tutoring sessions if greater changes in behavior are to be seen. More sessions would be expected to lead to improved relationships with tutors and consequently result in the children showing better classroom behavior.

A shortcoming of this project is that it fails to validate "high" and "low" social reinforcement behavior with a formal external criterion. A logical next step would be to compare the behavior of the tutors in this experiment with the behavior of tutors who are believed to have "high" or "low" socially reinforcing teaching styles. The observers' informal reports about the tutors' behavior on the questionnaire given just after the completion of the project would, however, support the belief that tutors acted in a manner consistent with the constructs of high and low social reinforcement. Characteristic comments were "Sometimes they seemed to care more about

the child" and "I think the tutors were more interested in some children than others." These observations would indicate that the tutors' behavior was an accurate representation of "real-life" differences in teaching styles.

It is possible that the behavioral observations were reactive measures and therefore presented a distorted picture of behavior change. This is especially likely for tutoring session observations where the judge was in the room with the tutor and the child. Regarding the classroom observations, it is possible that "post" measurements were more reactive than "pre" measures because the children may have had time to realize that they were being watched. It may, however, have been the case that earlier observations were more reactive because the children had less time to adjust to the presence of observers.

The independent measures in this study lack the capacity to classify many tutor behaviors which might have had a great effect on outcome data. Probably more important, however, is that many complex interactions between the child and the tutor were unrecorded. Both of these limitations are common to studies examining process in relation to outcome. In both cases the investigator is forced to select a few "objective" variables which are believed to be representative of the general class of behaviors of interest.

This study has implications which extend well beyond cognitive-behavioral tutoring with impulsive children. It directs attention to what is often considered a crucial component in effective psychotherapy: social reinforcement and positive attitude toward the client. The importance of positive therapist characteristics was

stressed by Jung in 1934 when he wrote: "It is in fact largely immaterial what sort of technique he uses, for the point is not the technique . . . the personality and attitude of the doctor are of supreme importance--whether he appreciates this fact or not . . ."
(1932, pp. 159-160).

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Chapter 5

SUMMARY

In recent years verbal self-instructional (VSI) training procedures have become one of the primary approaches in dealing with many of the undesirable behaviors exhibited by children with attention deficit disorders. Investigators using VSI techniques have successfully taught children better social (Camp, Blom, Hebert & van Doornick, 1977) and academic (Kendall & Finch, 1978); Bornstein & Quevillon, 1976) problem-solving skills by training them to use mediating responses designed to help them deal effectively with a variety of problem areas. For example, children have been taught to correctly describe interpersonal problem situations aloud, to improve academic performance by thinking of several alternative solutions, and to avoid quick decisions by first considering different possible courses of action.

In one case study, Kendall and Finch (1976) used the combination of a response-cost and VSI techniques when they treated a 9 year-old boy who had been described as an "aggressive, feisty, and uncooperative child." They noted improved social behavior which generalized to a different therapist, to another room, and when a different selection of toys was available. In discussing these results, the authors noted that the social reinforcement of the relationship between the child and the therapist appeared to increase the frequency of positive behavior changes in addition to those specified as target behaviors. This observation suggests that by contributing to behavioral gains the

child-therapist relationship might be an important component in the overall treatment package.

The effects of the child-therapist relationship on outcome data have not been examined in any of the reported studies on VSI training. The purpose of the present study was to investigate the contributions of this relationship on children's social and academic behavior by manipulating social reinforcement. It was hypothesized that children who were taught in a way that fostered the development of constructive interpersonal exchanges would show more improvement on dependent measures than children who were instructed in a less personal manner.

Method

Subjects

A total of 24 children (mean age = 9 years, 11 months) were chosen from 16 second through fifth grade classrooms in the Missoula, Montana, Public School System. When referring children for this study, teachers and counselors were encouraged to select children on the basis of disruptive classroom behavior and attention deficits. Teachers also completed the Conners' Teacher Rating Scale (Conners, 1969) for each child. Eligibility for this study required a total score of at least 15 on the Hyperkinesis Index of the Conners' scale. The mean score for those subsequently chosen was 19.71 (S.D. = 3.37). All but three of the subjects were male. One Native American, one black, and one Asian child (all males) were among those selected.

Design

In this study, a between groups design was used in which equal numbers of children were randomly assigned to (1) a High Social Reinforcement (HSR) condition, (2) a Low Social Reinforcement (LSR) condition, or (3) a No-Contact Control (NCC) group. A VSI procedure (Fisher, 1982) based on the work of Meichenbaum (1975) was used in all treatment groups. In this treatment, modeling, reinforcement contingencies, and a VSI "5 step" procedure (Padawer, Zupan, & Kendall, 1980) were used. The VSI steps were employed to teach children to: (1) correctly describe a problem, (2) consider possible alternative solutions, (3) stop and think about the probable solution, (4) give an answer and (5) say either a self-reinforcing or a coping statement depending on the accuracy of their answer. In the first tutoring session children were taught to solve a variety of "sequence problems" (Padawer, Zupan, & Kendall, 1980) using these steps. For the remaining sessions, classroom teachers assigned each child academic problems to work on with the tutors according to the child's individual needs.

Tutors were four female undergraduates who expressed strong interest in teaching children and had some knowledge of experimental design from previous college course work. Each tutor was randomly assigned two children in each of the treatment conditions. Tutors tried to establish close relationships in the HSR group by encouraging short discussions about topics of interest to the children. These talks covered such things as household pets, friends at school, or future career plans. Tutors were also instructed to convey an attitude of interest in the children by making eye contact regularly, facing the

children often, smiling frequently, occasionally touching the children, and speaking in a very encouraging manner.

When teaching in the LSR condition, tutors were told to make instruction relatively more impersonal and "mechanical" than it was for the HSR group. This required that the tutors show less of the reinforcing, "friendly," behaviors than they did for the HSR children. The tutors were not disapproving or punitive in any way during the LSR condition but simply expressed less personal interest in the children and gave less encouragement. Classroom teachers were blind to the existence of high and low social reinforcement conditions.

Children assigned to the treatment groups were taken from their classrooms during the regular school day to complete four individual tutoring sessions, each of which lasted approximately 40 minutes.

Procedures

Prior to the collection of any data, classroom observers sat in the children's classes for at least one hour. This procedure was designed to insure the non-reactivity of the measures by giving the children time to acclimate to the presence of an observer. After this hour, the first in-classroom data were collected for 20 minutes. This observation was immediately followed by the first tutoring session and then by another 20 minute classroom observation. All further meetings took place on subsequent days with a mean number of 12 (S.D. = 7.94) days between the first and last sessions. The second and third tutoring sessions took place with in-session observations only while the fourth tutoring session was preceded and followed by classroom observations in the same

manner as the first session. All in-session independent and dependent variables were recorded during the last 30 minutes of the tutoring sessions. Children in the control group were observed in their classrooms during the same time periods that data were collected for children in treatment conditions. All observers were uninformed as to the purpose and design of the experiment. Also, classroom observers did not know whether the child they were observing was in a tutoring or control group.

Independent Variables

The concept of rapport encompasses a number of nonspecific variables which have been neither well defined nor explored by previous research. Consequently, the present specification of this familiar construct is not an attempt to introduce previously unrecognized variables, but is instead intended to operationalize the child-tutor relationship for the experimental requirements of this study.

The independent variable, non-contingent social reinforcement from the tutors, was divided into the seven sub-classes of: (1) Head Orientation in the direction of the child, (2) Eye Contact with the child, (3) Verbal Reinforcement (approval given with an enthusiastic tone of voice), and Verbal Approval (approval given in a monotone style), (4) Positive Facial Expressions (such as smiles), (5) Physical Contact with the child, (6) Positive Verbal Content, and (7) Pleasantness of Vocal Expressions. All categories correspond to behavior that has been shown to be reinforcing to children or interpreted as reflecting approval (e.g., Allen, 1967; Brannigan &

Reimondi, 1979; Curry, 1960; James, 1932; Layne, 1978; Mehrabian, 1969, 1970; Mehrabian & Ksionsky, 1972; Nachshon & Wapner, 1967; Spence, 1967).

Head Orientation, Eye Contact, Facial Expression, and Physical Contact were all recorded by judges who observed the tutoring sessions. Observations of all non-verbal behaviors during the tutoring sessions alternated on a 10 second basis following the schedule: (1) observe independent variables, (2) record independent variables, (3) observe dependent variables, (4) record dependent variables. Non-verbal in-session variables were recorded either 1 or 0 for a given 10 second period. No "double credit" was scored for a behavior that appeared twice in a particular interval.

All verbal in-session behaviors were scored on the basis of audio tape recordings made during each tutoring session. Scorable recordings were available for 45 (70 percent) of the 64 meetings. Verbal Reinforcement and Verbal Approval were scored either 1 or 0 while Positive Verbal Content and Pleasantness of Vocal Expressions were scored on the basis of Likert-type rating scales (Mehrabian, 1972). Ratings of these verbal behaviors were done on a 15 second observe, 15 second record basis.

Dependent Variables

Dependent variables were of six types: in-classroom behavioral observations, Attending Behavior during tutoring, Head Orientation in the direction of the tutor, Pleasantness of Vocal Expressions during the tutoring sessions, Performance of the Tasks given during tutoring

sessions, and Latency in Responding during step number three ("stop and think") of the VSI training. Vocalization or Making Noise, Disturbing Others, and Off-Task (Mehrabian, 1972) were recorded with a 1 or a 0 for each interval. Following the non-verbal behavior observation schedule outlined earlier, the children's Attending Behavior during tutoring (defined as spending the majority of the time cell working on the assigned problem) and Head Orientation in the direction of the tutor were directly observed in the sessions and scored either 1 or 0. All other dependent variables were judged from the tape recordings on a 15 second observe 15 second record schedule according to the given scales (Mehrabian, 1972).

General Classroom Behavior

The general behavior of all the children in the classrooms was scored for 10 seconds every five minutes during classroom observations of experimental children. This procedure was designed to insure that there were not great variations in the behavior of other classroom children between different experimental groups. Ratings were done according to the scale: 0 = No class disruptions, 1 = Slightly disruptive class, 2 = Moderately disruptive class, 3 = Seriously disruptive class.

Observations of Children's Performance and the Tutors' Use of the Response-Cost

Judges of the children's performance in the tutoring sessions and of the tutors' use of the response-cost (which a tutor could enact whenever a child made an error) rated the children's use of the VSI

steps according to the following categories: (1) Too Fast. The child did not spend enough time on a step to do a good job or seemed to be rushing in some way. (2) Wrong Answer. The child gave a wrong answer. (3) Skipped a Step. (4) Latency to Step Number Three. The number of seconds a child paused during step number three was timed with a stop watch. The tutors' behavior was scored according to when and why they used the response-cost.

Observer-Criteria Reliabilities

Observer-criteria measures were designed to check how closely observers agreed with the principal investigator in scoring the children's and tutors' behaviors. After being trained, judges were required to rate 40 minutes of sample audio tape recordings which had previously been scored by the principal investigator. Separate reliability indices were computed for judging the observers' accuracy in rating the children's and tutors' behavior. The first index was determined by dividing the number of agreements between the judge's reports of the tutor's behavior and the previously scored audio tapes by the total number of problems completed by the child. Similarly, the second reliability index was computed by dividing the number of agreements between the judge's reports of the child's behavior and the scored tapes by the number of problems the child completed (in both cases, simply agreements divided by the total number of problems). In order for a rating of latency to step number three to be considered correct it had to be within five seconds of that given in the key.

During the initial observer-criteria reliability checks there was 100 percent agreement between the observers and the scored tapes for both the children's and tutors' behaviors. Reliability checks were also completed at the end of the experiment to check for changing observer criteria. Mean scores when rating the children's performance at this time ranged from 95.39 to 100 percent (overall $\bar{X} = 97.93$) agreement for each of the five steps. Also, for each VSI step observers achieved from 98.85 to 100 percent (overall $\bar{X} = 99.66$) agreement when judging the tutors' use of the response-cost.

Inter-Observer Reliabilities

Inter-observer reliabilities were computed for all recordings of tutoring sessions. Reliabilities were determined by dividing the number of agreements between both observers by the total number of problems completed by the child. Observers achieved mean reliability scores which ranged from 93.89 to 96.01 percent (overall $\bar{X} = 95.21$) when scoring the children's performance at each of the five VSI steps and mean reliabilities from 97.42 to 99.41 percent (overall $\bar{X} = 98.71$) for observations of the response-cost use.

Tutor-Observer Reliabilities

Tutor-observer reliability checks were conducted on all recordings to determine the tutors' accuracy in using the response-cost. Reliability scores were computed for each session by dividing the number of agreements between the tutor's actions and the observer's judgements of the correct response by the number of problems completed by the child. The resulting tutor-observer reliability check data (weighted

mean scores averaged over all tutors and observers) for each of the five VSI steps ranged from 95.59 to 97.48 percent (overall $\bar{X} = 96.60$) agreement.

Reliability Checks on Observations of Tape-Recorded Independent Reinforcing Behaviors and Pleasantness of Child's Vocal Expressions

Inter-Observer Reliabilities

Two observers were trained to use the scoring criteria for both the independent verbal behaviors and for the children's Pleasantness of Vocal Expressions. After observer training was completed 4 tapes were chosen at random to represent each tutor. Two of these had been recorded during the HRS condition and 2 were made during the LSR condition. This resulted in a total of 16 tapes, evenly divided among tutors and treatment groups. Observers rated all recordings on a 15 second observe, 15 second record basis.

Inter-observer reliability checks were computed for all 16 tapes by dividing the number of ratings in each category exactly matching between the two judges by the total number of intervals scored. Weighted overall mean scores and ranges for the reliability of observers on each recording were: (1) Verbal Reinforcement, $\bar{X} = 96.00$, range = 90.00 - 100 percent agreement, (2) Verbal Approval, $\bar{X} = 91.00$, range = 79.00 - 98.00, (3) Positive Verbal Content, $\bar{X} = 86.00$, range = 77.00 - 93.00, (4) Pleasantness of Vocal Expressions (tutor), $\bar{X} = 73.00$, range = 59.00 - 93.00, and (5) Pleasantness of Vocal Expressions (child), $\bar{X} = 78.00$, range = 60.00 - 93.00.

Reliability Checks on Directly Observed Variables

Observer-Criteria Reliabilities

In-classroom and in-session observers were trained with three pre-scored 20-minute audio-video recordings of children in their regular classrooms and two recordings made during a VSI treatment. Using these tapes, a total of 15 undergraduates were trained to score directly observed behaviors which were later observed in the tutoring sessions and in the classrooms. After approximately 12 hours of training, each observer was required to achieve observer-criteria reliabilities of 80 percent or greater in each category of behavior on two consecutive days. Observers were also required to re-score all video tapes throughout the experiment to control for changing observer criteria. Observers rated an average (mean) of 21 minutes of tutoring recordings and 26 minutes of classroom recordings each week of the study. Reliability scores were determined by dividing the number of agreements between the observer's scores and previously constructed keys for each tape by the total number of intervals scored. Mean observer-criteria reliabilities and ranges of individual observer's mean scores for each category of taped classroom behavior were: (1) Vocalization, $\bar{X} = 93.02$, range = 75.00 - 100 percent agreement, (2) Disturbing Others, $\bar{X} = 97.86$, range = 92.59 - 100, and (3) Off-Task, $\bar{X} = 92.46$, range = 72.41 - 100. Observer-criteria data for in-session variables yielded mean scores and ranges of: (1) Eye Contact, $\bar{X} = 95.97$, range = 81.25 - 100 percent agreement, (2) Facial Expression, $\bar{X} = 96.24$, range = 90.00 - 100, (3) Head Orientation, $\bar{X} = 92.11$, range = 76.66 - 100, (4) Physical Contact with the child, $\bar{X} =$

99.94, range = 90.90 - 100, (5) Attending, \bar{X} = 99.28, range = 96.55 - 100, and (6) Head Orientation (child), \bar{X} = 90.51, range = 75.76 - 100.

Inter-Observer Reliabilities

Inter-observer reliability checks on directly observed behaviors were performed on 30 percent of actual in-session observations and on 40 percent of all in-classroom observations. These checks were done on a random basis by another observer who served as a reliability checker. Reliabilities were computed by dividing the number of observer agreements by the total number of ten-second intervals scored. Observers were required to achieve inter-rater reliabilities of 80 percent or greater to be allowed to continue making observations. Mean reliabilities and ranges of individual observer's mean scores for in-classroom variables were: (1) Vocalization, \bar{X} = 94.94, range = 84.27 - 100 percent agreement, (2) Disturbing Others, \bar{X} = 98.47, range = 96.15 - 100, and (3) Off-Task, \bar{X} = 94.00, range = 84.86 - 100. Similar data for in-session variables were: (1) Eye Contact, \bar{X} = 98.33, range = 96.89 - 100 percent agreement, (2) Facial Expression, \bar{X} = 98.71, range = 97.73 - 100, (3) Head Orientation (tutor), \bar{X} = 91.33, range 84.44 - 100, (4) Physical Contact, \bar{X} = 100, (5) Attending, \bar{X} = 97.84, range = 95.43 - 100, and (6) Head Orientation (child), \bar{X} = 93.64, range = 80.00 - 100.

General Classroom Rating Inter-Observer Correlation

A Pearson product-moment correlation coefficient of .69 was computed between observers' and reliability checkers' ratings of general classroom behavior.

Results

Table 1 presents mean ratings on the appropriate Likert-type scale (for "Positive Verbal Content" and "Pleasantness of Vocal Expressions") and the mean percentage of intervals scored in each behavior category (for all other variables) for independent measures. Resulting F ratios and between groups probabilities are also provided and are computed with a repeated measures analysis of variance. Results show significant differences on all measures in the direction of more social reinforcement for the HSR treatment group.

Repeated measures analyses of variance were first performed on dependent in-session variables comparing treatment groups. Table 2 presents overall mean scores of treatment groups, between groups F ratios, and the probability associated with each comparison. While no significant differences are indicated, all mean scores except "Child's Mistakes per Step according to the observer" show slightly better behavior by HSR children.

Table 3 gives mean scores for both treatment groups on several dependent measures which were recorded during the first and last tutoring sessions. A post-hoc Newman-Keuls multiple comparisons procedure revealed no significant differences between any scores. Although the LSR group showed slightly superior behavior in relation to the HSR group during session one, all measures indicate small nonsignificant differences in the direction of better behavior from HSR children in relation to LSR children during session four.

Table 1

Mean ratings, percent occurrence, F ratios, between groups probabilities for independent variables. All analyses have 8 degrees of freedom.

Independent Variable	HSR Condition (Mean)	LSR Condition (Mean)	F Ratio	Between Groups Probability
Positive Verbal Content (Mean rating. Higher scores indicate more positive verbal content.)	1.16	.87	10.98	.01*
Pleasantness of Vocal Expressions. (Mean rating. Higher scores indicate more pleasant vocal expressions.)	2.21	1.97	5.48	.045*
Verbal Reinforcement Divided by Verbal Approval. (Percent occurrence. Larger ratios indicate more social reinforcement.)	.42	.10	11.76	.009**
Physical Contact. (Percent occurrence.)	.56	.00	16.27	.004**
Head Orientation (Percent occurrence.)	41.49	15.55	17.36	.003**
Facial Expression (Percent occurrence.)	12.46	.98	12.09	.008**
Eye Contact (Percent occurrence.)	16.98	2.90	24.81	.001**

Table 2

Mean scores for treatment groups over all sessions, F ratio, and between groups (main effects) probability associated with in-session dependent variables. All analyses have 8 degrees of freedom.

Dependent In-Session Variables	Overall Mean of High Social Reinforcement Condition	Overall Mean of Low Social Reinforcement Condition	F Ratio	Probability
Attending (Percent occurrence)	98.28	97.11	.52	.50 ^{ns}
Child's Head Orientation (Percent occurrence)	18.41	17.18	.03	.85 ^{ns}
Mean Seconds Latency in Step Number 3	63.24	49.19	1.35	.28 ^{ns}
Pleasantness of Children's Vocal Expressions (Mean rating. Higher scores indicate more pleasant expressions.)	2.06	1.94	.66	.56 ^{ns}
Child's Mistakes per Step According to the Observer.	.06	.05	.03	.85 ^{ns}

Table 3

Mean scores computed for treatment groups
in the first and last sessions

Dependent In-Session Variables	Means of High Social Reinforcement Condition		Means of Low Social Reinforcement Condition	
	Session 1	Session 4	Session 1	Session 4
Attending (Percent occurrence)	97.93	98.85	99.14	94.99
Nickels Lost per Session (Mean number)	2.12	1.37	2.12	1.62
Child's Head Orientation (Percent occurrence)	14.56	19.60	17.18	17.42
Mean Seconds Latency in Step Number 3	37.71	123.99	39.20	72.08

For each dependent in-classroom measure this study used two separate analyses to determine pre-post changes. For the first of these, scores for classroom observations 1 and 2 were combined and designated as one "pre" observation while measures taken in observations 3 and 4 were considered to be "post." The resulting data were then compared with an analysis of variance. This comparison takes into account much recorded classroom behavior and thus should serve as a relatively stable measure. Second, in order to provide a measure that was not contaminated by a tutoring session before a "pre" observation or after a "post" observation, data from observation 1 were compared to data in observation 4 with a Newman-Keuls multiple comparisons procedure.

Table 4 presents mean scores for treatment groups when comparing observations 1 and 2 against 3 and 4 along with the appropriate F ratio and probability associated with each group x pre-post interaction. Although not a dependent measure, the category of "General Classroom Behavior" is included in this and the two following tables for comparison with other variables. On dependent measures taken during observations 1 and 2, all showed slightly less undesirable behaviors from LSR than HSR children. For two of the three variables, LSR children showed somewhat better behavior than controls on "pre" measures. When examining variables recorded in observations 3 and 4, HSR subjects demonstrated slightly less undesirable behavior in all three categories than the LSR children. A post-hoc Newman-Keuls multiple comparisons procedure showed a significant difference ($p < .05$,

Table 4

Mean percent of cells scored in each category for classroom observations 1 and 2 (pre) compared to the mean of observations 3 and 4 (post). The corresponding F ratio and probability for each group x pre-post interaction are provided.
All analyses have 21 degrees of freedom.

Dependent In-Classroom Variables	Means of Observations 1 and 2 for HSR, LSR, and NCC Groups			Means of Observations 3 and 4 for HSR, LSR, and NCC Groups			F Ratio	Probability
	High	Low	Cont.	High	Low	Cont.		
Vocalization	13.16	7.82	15.38	4.88	10.80	15.99	3.0	.07 ^{ns}
Off-Task	26.75	24.61	18.87	22.74	23.29	16.28	.02	.98 ^{ns}
Disturbing Others	3.32	.67	2.52	1.37	3.81	2.44	1.59	.23 ^{ns}
General Class- room Behavior (Higher scores indicate more disruptive behavior)	.64	.71	.67	.55	.87	.47	.97	.60 ^{ns}

21 df) between the HSR group's score for vocalization in observations 3 and 4 and both the NCC group's scores. General classroom behavior ratings indicate slightly more disruptive behavior in the classrooms of LSR children than both of the other two groups on "pre" and "post" measures.

Table 5 presents data obtained in observations 1 and 4. Mean scores (in percentages) for HSR, LSR, and NCC groups are provided for all measures. Planned Newman-Keuls multiple comparisons showed no significant differences between observations made during the first and last classroom periods. While all groups showed approximately the same amount of undesirable behavior on "pre" measures, LSR children demonstrated slightly more undesirable behavior than other groups in all categories during "post" measurement. On "pre" and "post" measures, LSR children's classrooms showed slightly worse ratings of general classroom behavior.

Table 5

Mean percent of cells scored in each category for classroom observations 1 and 4

Dependent In-Classroom Measures	Mean of Observation 1 for All Experimental NCC Groups			Mean of Observation 4 for All Experimental NCC Groups		
	High	Low	Cont.	High	Low	Cont.
	Vocalization	11.40	8.28	13.55	5.49	15.27
Off-Task	25.14	29.17	19.19	23.89	31.25	13.25
Disturbing Others	3.35	.93	1.17	1.29	6.95	3.59
General Class- room Behavior	.47	.75	.59	.48	1.13	.39

Discussion

This experiment demonstrates that it is possible to manipulate non-contingent social reinforcement in a therapeutic situation. Furthermore, the results of this study provide limited support for the hypothesis that the child-therapist relationship contributes to social and academic behavioral gains.

The data recorded for the independent variables showed that there were significant and, with the exception of "Positive Verbal Content" substantial between groups differences on all measures. Although the between groups comparison is significant for the category of "Positive Verbal Content" the magnitude of the difference appears to be relatively small. Possible reasons for this might be that the tutors were not trained well enough in this area to show large variations between groups or that the measure did not reflect different teaching styles. One can conclude however, that social reinforcement differed between treatment groups in respect to the independent variables.

While dependent measures taken during tutoring sessions show no significant between groups differences, they do indicate a trend of superior behavior of HSR children. For main effects all measures show HSR children performed slightly better than those in the other treatment group. Also, when considering behavior in session four, all measures show slightly less undesirable behavior on the part of HSR children. These between group differences, however, are usually small. This fact, along with the relatively few subjects used and the short duration of treatment, no doubt contributed to the absence of significant results. These slight differences may also be partly explained by the small

within groups variations on all measures. Once a child is in a one-to-one situation the tutor's general behavior appears to control most of the child's observable behavior regardless of the degree of social reinforcement. It may be that measures looking at cognitive changes might therefore be more appropriate indicators of change in the tutoring sessions. These measures would serve to highlight changes in such things as the children's self-concepts, evaluations of the work completed during the sessions, and self-confidence in doing schoolwork.

Over all analyses and measures of classroom behavior, only one (Vocalization or Making Noise in observations 1 and 2 vs. 3 and 4) showed significant results. There were, however, apparent patterns of nonsignificant between groups differences. While the following discussion does recognize that the majority of results are nonsignificant, it does attempt to draw conclusions from what are considered to be consistently occurring trends in difference scores.

In-classroom dependent post measures showed consistent trends indicating significant or slightly superior classroom behavior by HSR children over LSR and NCC groups. When comparing classroom behavior in observations 3 and 4, all of the dependent measures show HSR children had slightly fewer undesirable behaviors than did LSR children. The HSR group also performed better than the controls on two of the three measures during these post observations. Finally, a post-hoc Newman-Keuls multiple comparisons procedure revealed that HSR children exhibited significantly less inappropriate "Vocalization or Making Noise" behavior on the post measure than did NCC subjects both before and after tutoring.

Data collected in observations 1 and 4 indicated that while during "pre" measures all groups showed roughly equal amounts of undesirable behavior, "post" measures showed poorer behavior from LSR children in relation to both other groups. Although these differences are all nonsignificant, in several cases the magnitude of the differences is quite large.

Ratings of the general behavior of all children in the classrooms showed that there was a small nonsignificant tendency for more disruptive behavior in classes of LSR children during observations 3 and 4 than in the classes of children in both of the other groups. Whether this small difference indicates that the disruptive behavior of non-experimental children influences experimental children's behavior or vice versa is unknown.

It is interesting to observe that the greater the time span between pre-post classroom measures, the poorer LSR children seem to behave in relation to other groups. Such an observation could suggest two things. First, it might indicate that behavior change actually occurred as a logical pattern of behavioral improvement seems to be evident. One would expect from the original hypothesis that greater change would take place over time as the children developed constructive relationships with their tutors. Secondly, it could indicate a need for more tutoring sessions if greater changes in behavior are to be seen. More sessions would be expected to lead to improved relationships with tutors and consequently result in the children showing better classroom behavior.

A shortcoming of this project is that it fails to validate "High" and "Low" social reinforcement behavior with a formal external

criterion. A logical next step would be to compare the behavior of the tutors in this experiment with the behavior of tutors who are believed to have "High" or "Low" socially reinforcing teaching styles. The observers' informal reports about the tutors' behavior on a questionnaire given just after the completion of the project would, however, support the belief that tutors acted in a manner consistent with the constructs of high and low social reinforcement. Characteristic comments were "Sometimes they seemed to care more about the child" and "I think the tutors were more interested in some children than others." These observations would indicate that the tutors' behavior was an accurate representation of "real-life" differences in teaching styles.

When conducting this study, the authors selected a few "objective" variables which were believed to be representative of the general class of behaviors of interest. The independent measures classified only some of many behaviors which might have had a great effect on outcome data. Probably more important, however, is that many complex interactions between the children and the tutors were unrecorded. Further research might profitably examine the contributions of social reinforcement to behavioral gains by studying a larger variety of behaviors. Also, future research might explore further defining important variables in the child-tutor relationship and the effects of manipulating such variables over a longer treatment period.

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APPENDIX A
IN-SESSION BEHAVIOR FORM

APPENDIX B
CHECKLIST OF VERBAL BEHAVIORS

CHECKLIST OF VERBAL BEHAVIORS

NAME: _____ DATE OF TUTORING SESSION: _____ RATER: _____

		CELL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTALS				
CHILD	VERBAL REINFORCEMENT																																				
	VERBAL APPROVAL																																				
	POSITIVE VERBAL CONTENT																																				
	PLEASANTNESS OF VOCAL EXPRESSION																																				
	PLEASANTNESS OF VOCAL EXPRESSION																																				
	PLEASANTNESS OF VOCAL EXPRESSION																																				

		CELL	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	TOTALS					
CHILD	VERBAL REINFORCEMENT																																					
	VERBAL APPROVAL																																					
	POSITIVE VERBAL CONTENT																																					
	PLEASANTNESS OF VOCAL EXPRESSION																																					
	PLEASANTNESS OF VOCAL EXPRESSION																																					
	PLEASANTNESS OF VOCAL EXPRESSION																																					

		CELL	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	TOTALS						
CHILD	VERBAL REINFORCEMENT																																						
	VERBAL APPROVAL																																						
	POSITIVE VERBAL CONTENT																																						
	PLEASANTNESS OF VOCAL EXPRESSION																																						
	PLEASANTNESS OF VOCAL EXPRESSION																																						
	PLEASANTNESS OF VOCAL EXPRESSION																																						

TOTALS

APPENDIX C
IN-CLASS BEHAVIOR FORM

IN-CLASS BEHAVIOR FORM

CIRCLE YOUR NAME ON THIS SHEET

SUBJECT # _____ DATE _____ OBSERVER _____

RELIABILITY CHECKER _____

CLASS ACTIVITY, DISRUPTIONS, ETC. _____

RELIABILITY _____

AVERAGE (R) CLASS RATING: _____

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	CLASS RATING		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	CLASS RATING	
OUT OF SEAT																																				
VOCALIZATION																																				
DISTURBING OTHERS																																				
NON-COMPLIANCE																																				
PLAYING																																				
OFF-TASK																																				

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	CLASS RATING		49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	CLASS RATING	
OUT OF SEAT																																				
VOCALIZATION																																				
DISTURBING OTHERS																																				
NON-COMPLIANCE																																				
PLAYING																																				
OFF-TASK																																				

TOTAL INAPPROPRIATE BEHAVIORS _____ ÷ NUMBER OF MINUTES _____ = _____
INAPPROPRIATE BEH/MINUTE.

TOTAL OFF-TASK BEHAVIOR CHECKS _____

TOTAL OUT-OF-SEAT BEHAVIOR CHECKS _____

TOTAL VOCALIZATION BEHAVIOR CHECKS _____

TOTAL DISTURBING OTHERS BEHAVIOR CHECKS _____

TOTAL NON-COMPLIANCE BEHAVIOR CHECKS _____

TOTAL PLAYING BEHAVIOR CHECKS _____

TOTAL PERFECT CELLS _____
TOTAL CELLS SCORED

- 0 = NO DISRUPTIONS
- 1 = SLIGHTLY DISRUPTIVE
- 2 = MODERATELY DISRUPTIVE
- 3 = SERIOUSLY DISRUPTIVE

PRE _____

POST _____

APPENDIX D
CHECKLIST ON CHILD'S PERFORMANCE
DURING TUTORING SESSION

DATE OF THIS RATING _____
 DATE OF RECORDING _____
 ST# _____ TUTOR _____
 TAPE RATER _____

CHECKLIST ON CHILD'S PERFORMANCE DURING TUTORING SESSION

	1	2	3	# SECONDS PAUSE IN STEP 3	4	COUNTER # AT BEGINNING	5	ANSWER OFF-TASK STATEMENT
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

	1	2	3	# SECONDS PAUSE IN STEP 3	4	COUNTER # AT BEGINNING	5	ANSWER OFF-TASK STATEMENT
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

5# _____ DATE OF RECORDING _____

F = Too fast. (Child did not spend enough time on a particular step to do a good job or seems to be rushing in some way)

W = Wrong answer. (Child gave the wrong answer)

S = Skipped a step. (Child skipped a step)

* = Not sure if tutor enacted a response-cost.

* = Tutor enacted a response-cost. Be sure to enter F, W, or S according to what the tutor did along with this symbol.

"C" or "T" = Off-task statement (Initial statements)

If the tutor used a response-cost and you think a response-cost was appropriate enter your rating in the left of the cell and the tutor's action in the right of the cell.

EXAMPLE:

S	/	*
F		

OBSERVER SAYS CHILD SKIPPED A STEP

TUTOR USED A RESPONSE-COST BECAUSE SHE THOUGHT CHILD WENT TOO FAST (ALWAYS DIVIDE CELL IN HALF IF TUTOR USED A RESPONSE-COST)

How difficult do these problems seem for this particular child?

- (Circle one) 1 Easy
2 Medium difficulty
3 Very difficult

Type(s) of problems _____

Number of inconsistencies between observer judged response-costs and actual response costs carried out by the tutor: _____

Judge/Tutor reliability (#agreements/total#) = _____

An off-task statement is any statement which is unrelated to accomplishing the task at hand. Please record below the number of off-task statements spoken by the tutor and the child. Only record the initial statement in a conversation. Do not record a person as making an off-task statement if he/she is merely responding to an off-task statement made by the other person.

OFF-TASK STATEMENTS: Child _____
Tutor _____

Total mistakes on each step (according to the judge, not according to the tutor)

Step 1 _____ Step 2 _____ Step 3 _____ Step 4 _____
Step 5 _____ (child's mistakes only)

Mean number of seconds latency in step 3 _____

Total number of inconsistencies between reasons for enacting a response-cost. (Enter all inconsistencies between the judge and the tutor except for response-cost differences) _____

Total number of times tutor is known to have used a response-cost _____

Total number of times the judge thought a response-cost should have been used _____

Comments: _____

APPENDIX E
PARENT PERMISSION FORM

Dear Parent:

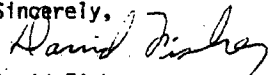
As part of my master's thesis I am conducting a study on the effectiveness of tutoring children who sometimes have a difficult time working in their classroom. _____ has been selected by his/her teacher as a student who might benefit by participating in such a program.

In this project children will be taken from their classroom several times for 45 minutes. They will work with a college student on a one-to-one basis and have the opportunity to earn a small reward (from 40 to 50¢) each meeting. During each session children will be taught a method of approaching academic tasks which should help him/her in doing schoolwork.

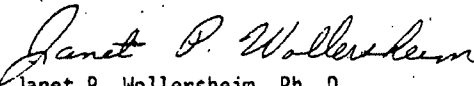
All children will be observed in the classroom for 40 minutes by a college student who will sit near the back of the child's classroom. The observer's presence will be explained to the class as "someone who is here to learn what we do at school" and will not be associated with your child in any way.

I sincerely hope you will grant permission for your child to participate by filling out the bottom portion of this letter and returning it in the enclosed envelope. (You may withdraw your child from this project at any time even after returning this letter) I will be glad to answer any questions you might have and to provide you with information regarding your child's performance. Work on this project will be supervised by Janet P. Wollersheim, Ph. D., Professor of Psychology at the University of Montana.

Sincerely,


David Fisher
Telephone #728-4198

Supervisor:


Janet P. Wollersheim, Ph. D.
Director of Clinical
Psychology and Professor of
Psychology

Child's name _____ School _____ Grade _____

Room number _____ Teacher _____

I grant permission for my child to participate in the project described above. Yes _____ No _____ (Check one)

Parent or guardian's signature _____

Parent or guardian's telephone number _____

APPENDIX F
TREATMENT MANUAL

A Cognitive-Behavioral Treatment for
Children with Attention Deficits*

by

David Fisher

* Substantial portions borrowed or adapted from: "Developing Self-Control in Children: A Manual of Cognitive-Behavioral Strategies." by Philip C. Kendall, Wendy J. Padawer, and Brian A. Zupan. 1980.

OVERVIEW OF THERAPY

This manual presents four, 45-minute cognitive-behavioral lessons designed to teach impulsive, unreflective, conduct problem children to approach their schoolwork in a more systematic and organized manner. In this cognitive-behavioral method the tutor teaches the child to use a set of verbal self-instructions when working on academically oriented tasks. A response-cost procedure is used where children are given a stack of coins which they may keep if they perform tasks correctly.

Verbal Self-Instructions

Verbal self-instructions provide a structured framework for the child to use when solving problems. When using the self-instructions the child proceeds from an initial definition of the task, to considering various alternative solutions, thinking about the probable consequences of each solution, and generating an appropriate self-reinforcing or coping statement after a solution is decided upon (see Table 1).

Modeling

The self-instructions may be introduced to the child as in the following sample dialogue.

T: Watch carefully how I use these five steps to solve this problem. Notice that I will first say each step out loud before I actually do each step.

Table 1

Content of self-instructional procedures with impulsive children.
(Meichenbaum, 1975; and Meichenbaum & Goodman, 1971).

Content of Self-Instructions

Problem definition	"Let's see, what am I supposed to do?"
Problem approach	"I have to look at all the possibilities."
Focusing of attention	"I better concentrate and FOCUS IN, and think only of what I'm doing right now."
Choosing an answer	"I think it's this one"
Self-reinforcement	"Hey, not bad. I really did a good job."
-or-	
Coping statement	"Oh, I made a mistake. Next time, I'll try and go slower and concentrate more and maybe I'll get the right answer."

-SAMPLE SEQUENCE PROBLEM-

INSTRUCTIONS: Look at each of the following patterns and circle the number that should come next.

NUMBERS: 1 3 5 7 9 10, 11, 12

T: Well, the first thing I have to do is to find out what I am supposed to do. That's step number one. I better read the directions up here (tutor points to directions on the top of the child's paper) and be sure I have this right. It says I am supposed to look at the numbers and circle the number that should come next in the pattern. Now that I know what I am supposed to do, I can go on to step number two.

Step number two says I should look at all the possible answers. Well, I could answer (tutor reads through each alternative on the

paper). Now that I have read all the possibilities, I can go on to the next step.

Step number three says that I should really "focus in" and concentrate on what I'm doing. I better really think hard on this one. Now I'm going to look at the numbers in the problem. They are: (tutor slowly and carefully reads the numbers from the problem out loud). Hmmmmm. Let me think about this for a while. The number "10" is probably not correct because But I'm not sure yet because I have not thought about each of the three possible answers. O.K., the second answer could be correct because The last answer could also be correct because That means that I have to choose between the last two answers. I better look them both over again so I can be sure that I am correct. (Tutor reads each answer over again.) Oh! I know! I think answer "11" is correct because

Now that I'm sure I know the answer I'll go on to step number four and pick an answer. I pick "11". (Tutor looks at answer key and finds that the solution was correct.) Hey, not bad! I got it right.

Step number five says that I can tell myself I did a good job.

In the session the tutor models the use of the self-instructions approximately two times before the child is given a problem of his/her own. The number of times the tutor initially models the use of the five steps and coping statements may vary depending on how easily the child catches on. For the remainder of the session the tutor is to model every third problem for the child.

It should be apparent that tutoring involves a minimum of direct teaching and mainly relies on demonstration. Instructions are used only to tell the child which particular task to work on or to correct errors.

The correct use of verbal self-instructions requires that the child say each step out loud, in the correct order, and at a very slow pace. Any time the child answers a problem incorrectly or mis-uses any of the self-instructions the tutor must use a response-cost.

Response-Cost Procedure

In the beginning of the tutoring sessions the child is given 10 nickels. One of these is to be taken away from the child each time he/she chooses the wrong answer or uses any of the self-instructions incorrectly. Any nickels left over at the end of tutoring are the child's to keep.

It is important that the child understand why a nickel was taken away so he/she can avoid the same mistake in the future. The tutor should explain exactly why each coin was taken away immediately after the mistake. Some appropriate explanations might be: "You lost a nickel because you skipped step number one," or "You lost a nickel because you went too fast in step number three."

In order to facilitate the purpose of coping statements and help the child to learn to accept mistakes the tutor must explain errors in a non-punitive fashion.

Session 1

Which One Comes Next?"

Purpose

This task is at an introductory level with the intent of aiding in the child's thorough acquisition of the verbal self-instructions. This will enable the child to see how the self-statements can be used to help him/her stop and think before attempting to solve problems, to cope with mistakes, and to provide self-reinforcement for thinking and reflecting as a problem solving strategy.

Task Description

This task consists of pictures that are placed in a certain sequence. The child must study the sequence and pick from three possible choices which one would come next in the sequence. There are numerous task items, beginning with easy sequences and progressing to more difficult items (see sample in Appendix A).

Application of the Procedures

The following section provides both a detailed outline of how to introduce the tutoring to the children and a general example of the modeling procedures and dialogue as they most frequently occur.

Introducing Tutoring to the Children

My name is _____, and we'll be working together today on these problems. Now, that might look like a lot to finish. But it doesn't matter how many we get done. We're going to try and go very slowly and do a good job, even if we only finish a few tasks.

When we do each task, we're going to talk out loud, and say five things, or steps, every time we do a task. I'll do the five steps with you later.

See these nickels? I'll give you ten of them. They are yours to keep for the whole meeting. But when you make a mistake, you will lose one. There are three kinds of mistakes and three ways to lose a nickel.

1. Going too fast. I want you to do all the work slowly and carefully. If you go too fast, you lose one.
2. We will be saying five steps for each task. If you don't say a step, that's a mistake and you lose a nickel.
3. The third mistake is the easiest to understand. If you get the wrong answer, that's a mistake, so you lose a nickel. O.K.?

The verbal self-instructions and coping statements are introduced at this point.

The tutor and the child proceed to work through each task at this point with the tutor enacting the response-cost when she feels that the child has an adequate understanding of the verbal self-instructions.

Sessions 2 through 4
"Assignments by the Teacher"

Purpose

These sessions are to help the child with academic problem areas that he/she has trouble with in class. The task in this session will be decided upon by the teacher and the tutor together. It should be especially valuable to the child to have the opportunity to directly apply the verbal self-instructions to schoolwork because this should facilitate generalization of learning to the classroom situation.

Task Description

Any schoolwork that is exclusively reading, writing, or arithmetic.

APPENDIX A
SEQUENCE PROBLEMS

