

MODIFYING IMPULSIVITY IN HANDICAPPED CHILDREN
THROUGH THE DEVELOPMENT
OF RATIONAL THINKING

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PREFACE

This study is concerned with the modification of impulsive behavior in learning disabled and emotionally disturbed children. The primary objective is to determine if modifying irrational, absolutistic thinking concerning mistake-making, feelings of inferiority, frustration and perfectionism will decrease impulsivity and other negative effects, such as anxiety and poor self-image, while increasing the youngster's ability to analyze and synthesize data in a problem-solving context. A set of materials and techniques have been proposed by the author under the rubric the "Clear Thinking Method."

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

The intent of the current investigation is to provide and examine data concerning a rational emotive conceptualization of impulsivity. To do so, the experimental population will consist of moderately handicapped children identified by their teachers as impulsive. The experimental population will receive instruction based on rational emotive principles which is designed to assist children in becoming less impulsive. The currently accepted view of impulsivity by Kagan (1966) involves the mechanics of how an individual thinks. From this vantage point, impulsivity is seen as a structural problem and involves the method that an individual uses to structure stimuli and gain psychological meaning from the environment (Blackman and Goldstein, 1982). Therefore, the individual who works quickly, makes decisions without considering the elements of a task or situation, and produces many errors is impulsive. Most of the research has taken this structural approach to impulsivity (Epstein, Hallahan and Kauffman, 1975).

This structural approach virtually ignores much of the theoretical and causal basis of impulsivity proposed by

Kagan, Rosman, Day, Albert and Phillips (1964). This theoretical basis is virtually identical to the rational emotive conceptualization discussed in upcoming pages but stops short of considering the individual's thoughts and beliefs. The difference in the two approaches to impulsivity, the traditional and the rational emotive, is the therapeutic focus in the rational emotive approach on the individual's actual thoughts: that is, the internal thoughts and beliefs of the individual and the actions that these thoughts precipitate. The conceptualization of impulsivity maintained in this study is based largely on the writings of Knaus (1973), Watkins (1977), and Ellis and Knaus (1979). These writings in turn owe their conceptual foundations to the rational emotive therapy (RET) of Ellis (1957, 1958, 1962).

Ellis (1962) suggests that negative emotions such as anger, anxiety, and depression occur when an individual fails while holding irrational cognitions (beliefs) about the goal to be obtained. Further, he suggests that these beliefs are absolutistic and demanding. Appropriate therapy, according to Ellis, involves challenging irrational beliefs and replacing those beliefs with representative rational cognitions or self-talk. Waters (1982, p. 670) describes the intent of RET as ". . .teaching the skills necessary for adults and children to become independent, clear thinkers who feel and behave in ways which help them to attain their goals." RET is based on the idea that emotions come from

perceptions of reality and subsequent evaluation and not from actual situations.

Knaus (1973) mentions impulsivity in a rational emotive context. He suggests that impulsivity is the result of habitual patterns of irrational thought. These irrational thoughts are triggered by underlying beliefs concerning perfectionism and fear of failure. He suggests that these beliefs are reflected in the individual's self-talk. Self-talk is defined as the cognitions that an individual uses to explain his or her perceptions of an event and its outcomes (Ellis, 1962).

Irrational self-talk on perfectionism and fear of failure might include:

If I don't perform perfectly, others will think poorly of me. I cannot live up to expectations; and because I can't, I must be worthless, or, because I did not succeed this time, I can't succeed and will always fail (Ellis and Knaus, 1979, p. 41).

According to Knaus (1973, p. 3) these habitual irrational thoughts lead to feelings of anxiety, of being overwhelmed, and of anger towards self. Condemnation of self is reflected in self-talk such as: "I can't stand myself," "I am a stupid idiot," and "I should be able to do this." Knaus further believes that the individual judges himself or herself based on the perceived reaction of others to his or her failure. He also suggests that impulsivity arises from a combination of innate low frustration tolerance and beliefs concerning failure and task difficulty. For example:

A person is confronted with a task, decides that it is too difficult or not worth the effort, and just gives up for varying periods of time.

Next, due to external or internal pressure to complete the task, giving up is replaced by bursts of unfocused activity. When this approach proves unsuccessful in completing the task, the individual resorts to quick, rapid, impulsive short cuts in a last ditch effort to succeed. These impulsive attempts at task completion fail which affirms to the individual that the task was indeed too difficult (Knaus, 1973, p. 5).

According to Grieger (1975) the above scenario involving failure suggests a pattern of absolutistic thinking. This simply means that the child comes to believe that once he has failed, he will always be a failure. The result is fear of failure and self-condemnation. Fear of failure, according to Hauck (1967) is self-blame and anxiety over one's own lack of adequacy.

Watkins (1977) also suggests that an absolutistic manner of thinking is related to impulsivity. He indicates that the impulsive person believes that the things one wants, one absolutely must have or be forever unhappy. The individual demands that urges be met and acts out when immediate gratification is not achieved. Ellis and Knaus (1979, p. 57) suggest that the need for immediate gratification is the result of an innate drive towards short-range hedonism. Such a drive is reinforced in our society by "instant solution myths" created by the media and credit market.

According to Burns (1980), the mechanism of impairment

in irrational absolutistic thinking involves three types of thought processes. First is all-or-none thinking in which all experiences are dichotomous. The second is overgeneralization in which the individual jumps dogmatically to the conclusion that a negative event will be repeated endlessly. The third process is "must" and "should" statements. These statements compel the individual to act, feel, and think in a certain way. Failure to do so leads to shame, guilt, and depression while the fearful anticipation of consequences leads to anxiety. In addition, hostility and anger towards self or others results when one fails to live up to a "must" statement (Wessler, 1977).

Ellis and Knaus (1979) have identified "must" statements that are of prime importance in irrational thinking. These include: "I must be perfect," "I must not make mistakes," "I must be upset when frustrated," "I must always get what I want," "I must always have the approval of others," "I must not bring disapproval onto myself because that would mean I'm an unworthy person."

Knaus (1974) suggests that challenging the irrational beliefs about perfectionism, fear of failure, mistake making, and inferiority that underlie "must" statements may lead to improved mental health.

Försterling and Garfinkel (1981) noted that the experience of failure is more intense when irrational cognitions (musts) about the attainment of a goal are held. They suggest that disputing the irrational belief of individuals

might alleviate undesirable emotional states such as anger, aggression, and anxiety.

The overall conceptualization of impulsivity presented herein suggests that the inclination to engage in irrational absolutistic thinking already exists in individuals. In this circumstance, when a goal is not met or an urge not satisfied, the individual searches for solutions, albeit successfully or unsuccessfully, and then for a source of blame for failure to obtain gratification. Knaus (1973) suggests that the irrational individual condemns himself or herself for the failure. In addition, the individual in an absolutistic way overgeneralizes the negative event and begins to avoid similar tasks due to the perception of these tasks as being too difficult (Burns, 1980). Once the individual has assigned blame to the self, the individual attempts to interpret why he or she failed. Weiner (1979) indicates that the search for cause is a prime source of motivation and parallels hedonism rather than replacing it.

According to Folkes (1978), students who experience cyclic failure are more likely to search for a causal explanation. Diener and Dweck (1978) support this statement and conclude that failure-oriented helpless children are more likely to supply attributions of cause than are other mastery-oriented children.

Weiner (1972) indicates that his theory of motivation is concerned with attributions made concerning success and failure. He suggests that attributions are made along three

dimensions. They are stability, control, and locus. These dimensions combine and recombine according to one's experiences and create expectations or beliefs about the probability of future success or failure (Weiner, 1979).

The stable dimension has an external and internal locus, and causes may be controllable or uncontrollable. An uncontrollable, internal, stable cause could be ability, while a controllable cause would be typical effort. The unstable end of this dimension would be mood and immediate effort respectively. The concept of external controllable or uncontrollable causation is dependent on the vantage point of the actor in the attribution framework. An external, controllable stable cause might be teacher bias from the teacher's vantage but not from the pupil's. An external uncontrollable stable cause could be task difficulty from the pupil's perspective but not from the teacher's. Whereas, the unstable end of this dimension would be unusual help from others (controllable) and luck (uncontrollable) (Weiner, 1979).

The search for and assignation of blame or cause for failure is a key conceptual element in a rational emotive view of impulsivity. Because of this focus on blame, cause, and failure, attribution theory lends important explanatory power to a rational emotive concept of impulsivity.

In this respect, the relationship of causal explanation for failure with rational emotive theory, can perhaps best be seen in research on learned helplessness. According to

Diener and Dweck (1978), if an individual fails and perceives the cause to be ability, which is internal (uncontrollable), and not easily changed (stable), then he or she could develop a perceived inability to surmount failure (learned helplessness). If this is combined with a performance evaluation in which the individual fails but sees others succeed, then a low self-image results (Abramson, Seligman and Teasdale, 1978). In addition, if the individual who fails and consistently perceives failure as under the influence of external uncontrollable causes (task difficulty or luck), then that individual is in danger of developing learned helplessness (Diener and Dweck, 1978). These two circumstances in which learned helplessness is likely to develop are defined in a reformulation of learned helplessness proposed by (Abramson et al. 1978, p. 54). The former circumstance is termed "personal helplessness", while the latter is termed "universal helplessness". In both situations the individual who habitually fails may develop the opinion that ". . . nothing I do matters", (an external uncontrollable stable attribution, as well as an example of all-or-none dichotomous thinking); "I will always fail", (an internal uncontrollable stable attribution and an example of overgeneralization). Both circumstances lead to the expectation of future failure and the helpless attitude of "Why try?", (Knaus, 1973, p. 4). As shown, both personal and universal helplessness can lead to an attitude of helplessness because in both, outcomes are independent of the

individual's responses; that is, outcomes are uncontrollable (Abramson et al., 1978). It seems that both research on learned helplessness and writings on impulsivity from a rational emotive viewpoint suggest the involvement of irrational absolutistic thinking. Both theories seem also to agree that failure, under certain circumstances, can lead to behavior that is not in the best interest of the individual -- particularly feelings of being overwhelmed, acting out, or helplessness.

Knaus (1973) is supported by (Maier, Seligman, and Solomon 1969, p. 3). They define, in anthropomorphic terms, what animals undergoing inescapable shock learn. They state it is essentially that, "Nothing I do matters." The result is that the animals behave in a passive and helpless manner. The difference in applying the learned helplessness formulations to human subjects according to Abramson et al. (1978) is that human subjects ask why they are helpless. It is the development of personal helplessness as a result of failure which involves unsuccessful trying and then attributions to internal causes that sets the two literatures apart. An example of the development of learned helplessness in human subjects has been proposed by Henker, Whalen and Hinshaw (1980). They have identified handicapped youngsters as a population highly prone to developing learned helplessness following failure. Henker et al. (1980), suggest that handicapped youngsters learn through early experiences that they differ from their peers. They

also realize that they are not subject to the usual expectations applied to their peers. The effect of these experiences is to suggest to parents, handicapped children, and others that their disability is due to something internal and totally out of individual control. Furthermore, the cause of the disability is impervious to change. This attributional framework may be adaptive in that it decreases the burden of guilt typically carried by exceptional children and their parents. However, it can be a problem if the parents or child decide that efforts to overcome facets of the disability are futile. The dynamics of this helpless attributional style involves ascribing failure to a lack of ability rather than effort. Then, as handicapped children fail in attempts to master new skills, they develop the absolutistic belief that they cannot perform or that their efforts do not matter. This basically sets up the expectation of failure for the future. One facet of life for all individuals is that they cannot avoid mistake making and failure. Henker et al. (1980) suggest that learning to cope with mistakes is a worthwhile goal. Epstein et al. (1975) suggests that impulsivity is found more frequently in handicapped children and that the stigma attached by teachers and peers when a pattern of incorrect impulsive responses emerges is reason enough to make correction of impulsivity a major concern. This paper intends to examine irrational absolutistic thinking as it relates to impulsivity in handicapped children.

Summary

The conceptualization of impulsivity presented in this research suggests that some people have an innate drive towards short-range hedonism and low frustration tolerance (Knaus 1973). If this hedonism operates in the presence of irrational beliefs about frustration, failure, mistake-making, perfectionism, and inferiority due to the judgement of self or of others, then several behaviors result. These include negative affects such as anger, anxiety and depression, impulsivity, and poor self-image. In the face of frustration, the individual acts out and either self-blames or blames others for his or her failure to obtain gratification. The behavior becomes cyclic both because of irrational absolutistic beliefs represented by must and should self-talk and as a result of the expectation to act, feel and think in a prescribed manner that such thinking creates. The absolutistic mechanisms of all-or-none dichotomous thinking and overgeneralization can lead to feelings of helplessness and of being overwhelmed. These feelings occur when the individual makes an assignation of cause that suggests ability (which is an example of all-or-none thinking and is not easily changed) rather than effort accounts for failure. If this is done while viewing others succeed, a low self-image results. Additionally, helplessness can occur when the individual consistently perceives failure as under the external control of task difficulty or

luck (an example of overgeneralization). In both circumstances the individual develops the opinion that ". . . nothing I do matters," "I will always fail, why try?" (Knaus, 1973, p. 4). Diener and Dweck (1978) indicate that there is a tendency of helplessness to generalize across many tasks. Likewise, Epstein et al. (1975) have indicated that impulsivity generalizes across many cognitive tasks. The suggestion from this conceptualization is that perhaps teaching an individual to cope directly with failure by changing absolutistic irrational thinking and the behavior that results would be valuable.

Statement Of Problem

Given the summary of the above research concerning the relationship of irrational absolutistic thinking and failure to impulsivity and learned helplessness, it would seem that a program aimed at changing absolutistic thinking when either characteristic is present would be a prime target for research. In addition, if beliefs about failure are conceptually as important and prevalent as indicated in the foregoing discussion, then impulsivity would seem only naturally to be found more frequently in handicapped populations. Epstein et al. (1975) suggest just that. However, research has not focused on impulsivity as a result of the type of internal thought discussed in rational emotive theory (Watkins, 1977). Instead, as Henker et al. (1980) note, research has tended to focus on the descriptors of

behavior, making those behaviors the target of remediation. This view is supported by Epstein et al. (1975) who examined research and identified several descriptors of impulsivity found most frequently in the research. These descriptors suggest that research on impulsivity is based, for the most part, on the external manifestations of the behavior. In addition, there have been no research activities that provide empirical data on modifying impulsivity in moderately handicapped children through the use of materials based on rational emotive theory. The current study utilizes an experimental design that includes attention-control and experimental groups. The study is based on the idea that if irrational absolutistic thinking, failure, self-concept, anxiety, impulsivity, and analytical reasoning are related, then applying materials that challenge irrational absolutistic thinking to a moderately handicapped, historically failure-prone population will result in changes in self-concept, anxiety, impulsivity, and analytical reasoning. That is, if they are related theoretically, then materials aimed at changing one will have corresponding effects on all of the others.

The suggestion herein that the role of internal thought has been overlooked in research on impulsivity is odd when given the importance of this behavior as a characteristic of handicapped children. This paucity of research might be due to the difficulty of assessing internal events. Henker et al. (1980) indicate several problems. First is the lack of

awareness, particularly in children, of their own causal attributions. RET theorists such as Ellis (1962) and Knaus (1974) point out that in therapy individuals initially need to become aware of their self-talk and the underlying irrational beliefs before changes can be made. In addition, the self-report nature of assessments may affect the way in which questions are answered. That is, subjects may answer with what they think the examiner wants to hear. These types of difficulties have been noted in much of the research on rational emotive theory. Kassino, Crisci, and Tiergerman (1977) indicate that an adequate self-report measure of rationality is not available.

Miller and Kassino (1977) indicate that research using instruments other than self-reports of irrational beliefs is needed. To use instruments that do not require self-report of irrational beliefs necessitates a focus on the facets of behavior affected by irrational absolutistic thinking. In the previous discussion, Knaus (1973) suggested that habitual irrational, absolutistic thinking results in feelings of anxiety, of being overwhelmed, and of anger towards self. Abramson et al. (1978) noted that failure, combined with performance comparisons against others who succeed, results in low self-image. Therefore, self-concept changes may be a valuable source of information in the current impulsivity study.

Self-concept is defined, for the purpose of this study, as that which is measured by the Piers-Harris Self-Concept

Scale (Piers and Harris, 1969). It concerns the relatively stable tendency of an individual to evaluate his or her physical and social attributes in either positive or negative terms. Another valuable source of information for the current study may lie in a measure of anxiety. An individual with a history of failure and who is impulsive is likely to perceive a variety of situations as stressful. Anxiety for the purpose of this study is defined as that which is measured by the Trait Anxiety scale of the Childrens' State-Trait Anxiety Scale (Spielberger, Edwards, Lushane, Montouri, and Platzek, 1973). Anxiety in this test involves the relatively stable general tendency of the individual to perceive many tasks and situations as stressful. Both of the instruments above are self-report tests; however, they do not measure the specific thought dynamics related to rational emotive theory. Thus, they avoid the problems previously cited by Miller and Kassinove (1977). The use of trait scale measures seems to suggest that these measures would be rather impervious to change. However, Bedell and Roitzsch (1976) found that the Trait Scale by Spielberger et al. (1973) is relatively stable unless utilized with a deviant population such as the emotionally disturbed and with intervening psychotherapy. They felt that the use of the Trait Scale is valuable in gauging the effects of intervention programs. Piers (1977) suggests that her scale measures the tendency of the individual to evaluate personal attributes. The current study attempts to

change the way subjects evaluate themselves; and therefore, it seems appropriate to use the Piers-Harris Scale (Piers and Harris, 1969). Piers (1977) cautions those attempting to improve self-attitudes that many studies have reported non-significant results. She indicates that the most logical explanation for these are: an intervention that is not powerful enough, a treatment that was too specific and affected only part of the test, or a treatment that was carried out over too short a period of time.

Impulsivity is defined in this paper as a lack of self-controlled behavior that results from irrational absolutistic thinking. It is characterized by quick immediate responses in an attempt to obtain gratification, unfocused attempts at problem solving and a search for quick solutions. This definition differs from the traditional structural approach only in its therapeutic focus on changing the internal irrational thoughts and beliefs of the individual. There is currently no assessment device for measuring impulsivity from this vantage. It should be noted, that even though this research focuses on the trigger mechanism for impulsivity, i.e., low frustration tolerance combined with irrational thought, the same overt structural deficiencies may still occur in the individual. In the rational emotive view, structural deficiencies occur for a different reason than the traditional approach supposes. Because of this, measures that require inhibition of immediate response, defy quick solution, and require

sustained effort at problem solving can therefore provide valuable information. For the purpose of this study, impulsivity as measured by the Matching Familiar Figures Test (MFFT) by (Kagan, 1966) is one such measure. Impulsivity, as measured by this test, is the inability of the subject to inhibit immediate response and avoid errors in a timed visual matching and selection task. In addition, to be included in the experiment, children with learning disabilities or emotional disturbances must have been identified by their classroom teacher as impulsive. A score of 124 or above on the Kendall Self-Control Scale (SCRS) for Impulsivity (Kendall and Wilcox, 1979) was necessary for inclusion in the study. The 40 students involved in the current study had an overall mean score of 151 with a standard deviations of 36. The SCRS mean for the norm group is 99.3 with a standard deviation of 46. The score of 124, used as a cutoff in this study, is the median score of the 214 students originally assessed and is also above the mean of any of the original norm groups. The SCRS is a teacher rating scale based on both a cognitive and behavioral definition of impulsivity. The cognitive factors are deliberation, problem solving, learning and evaluation. The behavioral factor is the ability to execute behavior that is chosen or inhibit behaviors that are cognitively disregarded. Another instrument utilized is the Woodcock-Johnson Reasoning Cluster contained in the Woodcock-Johnson Cognitive Abilities Test (Woodcock and Johnson, 1977). This

test defines reasoning as involving the ability of the individual to refrain from quick response and to employ analytical, relational, and integrative reasoning in problem solving situations. All three instruments provide non-self-report data to the current investigation.

The current study is designed to provide information on the reaction of a moderately handicapped population to materials designed to challenge irrational absolutistic thinking.

Moderately handicapped children, for the purposes of this study, are considered to be children in third-grade, fourth-grade and fifth-grade, self-contained learning disability and self-contained emotionally disturbed classes. Children with learning disabilities are defined by the cooperating school district as those children with a minimum WISC-R full scale IQ of 78 or above. These children must have an evaluation by a psycho-educational team which has determined that the student has one or more significant deficits in basic psychological processes. In addition, for self-contained placement, the team has indicated that the student has potentially average intellect and a significant discrepancy between expected achievement and actual achievement in at least three of the following areas: reading, reading comprehension, spelling, written expression, oral language, math, and listening comprehension, the combination of which prevents the student from progressing in a regular classroom with support services.

Children with emotional disturbances are defined by the cooperating school district as those children with a minimum WISC-R full scale score IQ of 78 or above who have been evaluated by a psycho-educational team including a clinical psychologist or school psychologist. This team must have determined that emotional problems are the primary disability. The emotional disability must be of such a nature that academic potential is not being reached and the student cannot be served in the regular classroom with support services.

The research hypotheses follow:

- (1) If the training materials employed in this study are successful, then subjects who receive treatment will experience a significant reduction in general anxiety when compared to a control group.
- (2) If the training materials employed in this study are successful, then subjects who receive treatment will experience a significant increase in their ability to inhibit responses and avoid errors in a visual scanning and selection task when compared to a control group.
- (3) If the training materials employed in this study are successful, then subjects who receive treatment will experience a significant increase in the tendency to evaluate oneself in a positive manner when compared to a control group.
- (4) If the training methods are successful, then

subjects who receive treatment will experience a significant increase in their ability to apply analytical, relational, and integrative reasoning to problem solving tasks when compared to a control group.

CHAPTER II

REVIEW OF SELECTED LITERATURE

Introduction

For the purpose of this study, the review of research primarily involved studies implemented over the last 13 years. However, theoretical background and some empirical research prior to 1970 that seemed to have value specific to the current study has been cited. Generally, studies considered included those research reports that dealt with the teaching of rational thinking techniques to normal children or to behavior-impaired children in the age range of 9 to 18. In addition, studies where concepts were taught in a school setting by a trained teacher or counselor were included. Studies on how different age groups react to training on rational thinking principles, studies of the effectiveness of training clinical populations with the techniques of rational thinking, and any studies or reports on specific instructional techniques or recommendations for teaching rational thinking principles were reviewed. Background information on cognitive style, theories of causation, and research on cognitive behavior modification techniques were reviewed as they related to the current

study.

Cognitive Style

The previous chapter has suggested that the cognitive style reflection-impulsivity dimension is an important one for handicapped youngsters. According to Blackman and Goldstein (1982) those interested in cognitive style are concerned with how people think rather than what they think. This highlights a basic theoretical difference between the currently popular view of impulsivity and the one proposed by rational emotive theorists. A rational emotive conceptualization is concerned with what an individual thinks and not necessarily the mechanics of how one thinks. Nevertheless, information on cognitive style dimensions provides valuable background for the current study. Blackman and Goldstein define cognitive style as the individual's characteristic approach to processing information. The approach allows the individual to structure stimuli so that the world takes on psychological meaning. This psychological representation of the world mediates between environmental stimuli and output of the organism. Individuals who employ careful attention, work slowly, monitor the various elements of a task and produce few errors are showing evidence of a reflective cognitive style. In contrast, individuals who work quickly, make decisions without considering all the various elements of a task or situation, and produce many errors are showing evidence of an impulsive cognitive style.

Another important dimension of cognitive style is whether the individual is field dependent or independent. The field dependent individual has difficulty attending to the relevant cues of a task. Keogh and Donlon (1972) argue that perceptual difficulties arising from field dependence underlie the emotional instability, distractibility, and impulsiveness of the learning disabled child. In addition, they suggest that a field dependent student may not define a school task adequately or recognize the cues necessary to perform successfully. Consequently, failure is experienced more frequently.

Epstein (1980) supports Keogh and Donlon (1972) in a study on learning disabled children. She concluded that learning disabled youngsters are more field dependent than normal groups. The reason, according to Epstein, is that learning disabled youngsters are less able to rely on internal cues or judgment when responding to a situation. Thus, when faced with conflicting information, they tend to respond based on the structure of the situation. According to Witkin, Lewis, Hertzman, Machover, Messner, and Wapner (1954) field dependence is a perceptual aspect of a larger, more pervasive analytic-global style. Responding to the overall structure of a situation rather than to the detail certainly seems to suggest an analytic-global style in learning disabled children. Instructionally, a global, impulsive child might learn more from a didactic mode of instruction in which rules and principles are stated

explicitly rather than induced (Kagan, Pearson, and Welch, 1966). Feldman (1980) supports Kagan et al. (1966) in a study on third-grade and fourth-grade impulsive children. She concluded that impulsive children tend to employ global strategies of analysis, while reflective children employ a more detailed analysis. Nagel and Thwaite (1979) suggest that learning disabled students are not only more impulsive than normals but employ poor strategic behavior in processing information.

According to Epstein et al. (1975), the reflectivity and impulsivity dimension of cognitive style has been thoroughly researched. A definitive study by Epstein et al. (1975) suggests several major descriptions of impulsivity that are found frequently in research. Prominent among these descriptions is the Kagan et al. (1964) problem solving characterization of impulsivity. Basically, this view suggests that impulsive individuals employ faulty hypothesis evaluation strategies. Kagan et al. (1964) suggests that impulsive responding develops from a cyclical trial and error approach where the child selects a hypothesis without regard for accuracy and with minimal reflection. Failure results, the individual becomes anxious, and due to agitation selects impulsively again. According to Kagan et al. (1964), if the cycle is repeated enough then the individual may withdraw from problem situations.

Much of the remaining literature on impulsivity is a direct outgrowth of Kagan et al. (1964) and the development

of the Matching Familiar Figures Test (MFFT) by Kagan (1966). Impulsivity has been described as the result of an inability or failure on the part of the individual to select and analyze relevant features of stimuli and to discard the irrelevant (field dependence). In addition, poor visual scanning and attention strategies are employed by impulsive individuals. That is, the impulsive person fails to look at all of the alternatives in a visually related task and centers on one dimension of the problem. There may also be a lack of sustained attention on one stimuli for any length of time.

Kagan et al. (1964) account for a predisposition towards cyclical impulsivity in three ways. First they felt it could be the result of a concern for competency; for example, the child has been rewarded socially for quick responses or has witnessed such rewarding and then seeks that reward by habitually responding quickly. This concern for competency may also be seen when a child doubts his or her intellectual ability but perceives the social reward to those who are quick. This child may then try to compensate for the intellectual deficit by always responding quickly. A second explanation is that a child, due to cultural factors, does not value accurate performance and therefore is anxious when failure occurs. The child simply has no particular incentive in favor of reflective thinking. The last causal factor proposed by Kagan et al., is constitutional predisposition. In a study conducted by Kagan (1971) infants as

young as four months showed a tempo preference towards fast or slow responding.

Irrespective of what causal factors are thought to underlie impulsivity, it has significant consequences for children. Research has indicated that an impulsive style generalizes to many cognitive tasks, and its outcome in those tasks that require a slower reasoned approach is faulty performance (Epstein et al., 1975). Epstein et al. (1975), also suggest that many of the behaviors commonly described as impulsive are characteristic of brain-injured, learning disabled, and emotionally disturbed populations. Furthermore, these authors suggest that the poor academic performance of some exceptional children may at least be partially explained by impulsivity. Blackman and Goldstein (1982) indicate that children who underachieve have been found to be more field dependent and impulsive than normal groups. The above facts seem to suggest that the modification of impulsivity in handicapped populations would be an important area for research.

Kagan et al.'s (1964) conceptualization of impulsivity as measured by the MFFT by Kagan (1966) has dominated much of the research concerning modifying impulsivity. The emphasis has been on changing the strategies of information processing methods used by the individual and measuring that change by scores of the MFFT. Epstein et al. (1975) suggests that most studies show that external forces can modify ability to delay response but do not affect ability to

perform accurately. Henker et al. (1980) suggest that the strategy emphasis of many modification programs may be incorrect. They believe that people tend to view the causal description of a problem as the preferred target of remediation.

In relation to this, there have been a variety of different training programs aimed at descriptors of impulsivity. These include traditional behavior therapy using reinforcement contingencies, teaching visual scanning techniques, training the impulsive child to simply slow response rate through the use of verbal cues, use of psycho-stimulants, training initial attention deployment, teaching hypothesis testing strategies, and more recently, self-instruction training aimed at reducing errors.

Kupietz (1980) suggests that research on several of these techniques has provided results of uncertain value. She indicated that the use of medication relieves symptoms over the short-term but does not teach the child self-control or any lasting strategies on how to deal with his or her environment more effectively. Nor does medication significantly affect academic performance. Medication as the sole form of intervention, therefore, seems unsatisfactory. Behavior modification, according to Kupietz, was developed as a substitute or adjunct to medication. The goal of behavior modification is to reinforce preferred behavior while eliminating disruptive and inappropriate behaviors. A weakness of this type of program lies in maintaining

treatment gains over extended periods of time. Reasons for this lack of generalization are numerous; for example, Kupietz suggests that a lack of planned activities to promote generalization to other non-experimental environments are characteristic of many studies. In addition, Kupietz found that frequently confounding variables, such as children moving in and out of classes, teachers and class climate differences inherent in the school environments, remained uncontrolled. Kupietz believes that dissatisfaction with traditional behavioral approaches and the need to overcome generalization difficulties led to the development of Cognitive Behavior Modification (CBM). Epstein et al. (1975) point out that CBM using procedures developed by Miechenbaum and Goodman (1971) is one technique that has proven successful in modifying both latency and accuracy scores on the MFFT.

The importance of CBM research to the current study is suggested by Watkins (1977). He indicates that there is no specific empirical support for a rational emotive theory conceptualization of impulsivity. Instead the success of CBM techniques in modifying impulsivity provides indirect support for the conceptualization. This is so, according to Watkins, because the two techniques share an emphasis on training the individual to use appropriate self-talk.

The next section discusses specific research that has utilized CBM techniques to alter impulsivity.

Literature on Cognitive Behavior Modification
with Learning Disabled and
Emotionally Disturbed Youth

CBM techniques are based on the premise that impulsive children have not internalized the inhibiting function of language (Luria, 1959). That is, impulsive children respond in an associative manner to cognitive and social situations and fail to use logic or reasoning (Camp and Bash, 1981). The technique is based on the work of cognitive-semantic therapists such as Kelley (1955), Ellis (1957-1958), Adler (1957), and Beck (1970). In essence, the technique was developed to improve the efficacy of behavior therapy by including attention to a client's cognitions. Both Rational Emotive Therapy (RET) and CBM agree on the importance of inner speech in the guidance of performance. One important divergence in the two types of therapy is in the importance of challenging the individual's irrational belief system. Miechenbaum (1972) suggests that rather than challenging the underlying irrational belief system as in RET, one can simply train individuals to use more positive self-statements when confronted with an upsetting event. To do this, procedures proposed by Miechenbaum and Goodman (1971) are used. These procedures include: experimenter modeling of step-by-step verbal self-instructions, and the repeating of those instructions frequently, plus the use of coping statements and a technique of behavior shaping which

moves the self-instruction from overt to covert speech. The coping statements utilized by Miechenbaum and Goodman (1971) act to verbally reinforce positive reactions to mistakes and guide the individual through the task.

Research by Finch, Wilkinson, Nelson, and Montgomery (1975); Douglas, Parry, Marton, and Garson (1976); Camp, Blom, Hebert, and Doorminck (1977); Kendall and Finch (1978); Burnstein (1980); Kupietz (1980); and Siddle (1980) have investigated the various aspects of verbal instruction training and coping statements with emotionally disturbed, learning disabled, and hospitalized emotionally disturbed children.

Finch et al. (1975) investigated the relative effectiveness of two techniques for modifying impulsive cognitive style, verbal self-instructions and training to delay before responding. Participants were 15 impulsive emotionally disturbed boys with a mean mental age of 11.25 years. The youngsters were residents at the Virginia Treatment Center for Children. Each student was tested with the Matching Familiar Figures Test (MFFT) and then assigned to one of three groups, matched as closely as possible within groups, on latency, errors, and mental age. The three groups involved were a cognitive training group, a group receiving practice in delayed responding, and a control group that received no training. Subjects were seen individually for six 30-minute sessions over a three-week period. The MFFT was administered as a posttest, and a *t* test was computed

for each group's latency and error scores. Results indicated a significant increase in latency for both the cognitive-training and delay-training group, but not for the control group. In error-making, the only significant decrease was for the cognitive-training group. Limitations of this study include the small number of students involved and an inappropriate statistical analysis. Analysis of variance could have provided information on which technique contributed most to the overall variance. In addition, no attempt was made to statistically control for initial experimental and control group differences on the MFFT. Because of this, one cannot be sure if the reported gains were due to initial differences between individuals or to the treatment. Nevertheless, some support has been gained trying self-instructional training with impulsive, emotionally disturbed boys. The mechanism fostering the most improvement appears to be the use of coping self-talk.

Douglas et al. (1976) studied the use of modeling, self-verbalization, and self-reinforcement techniques to train hyperactive children in less impulsive strategies for approaching cognitive tasks, academic problems, and social situations. Participants were all boys referred by staff psychologists, principals, or special education teachers in the greater Montreal area. Both parents and teachers had to agree that the child demonstrated serious and persistent hyperactive behaviors, including excessive activity level, attentional problems, and impulsivity. In all cases, the

parents reported symptoms with an infancy or early childhood onset. In addition, parents and teachers completed the short form of the Connors Rating Scale for Hyperactivity (Connors, 1969), and each child was tested with the MFFT by Kagan (1966). A mean score of above 1.5 on either the parent or teacher form on the Connors Scale, and a MFFT latency score below ten seconds had to be met before inclusion into the study. Children ranged in age from 6 years, 1 month to 10 years, 11 months. All were from lower-class or upper-lower-class homes. Parents had to agree to not seek pharmacological or other treatment during the six-month period of the project. Excluded from the project were children whose IQ was below 80. Eighteen boys took part in the training program. The control group which received no training consisted of 11 youngsters matched on age, Wechsler IQ, and scores on the parent and teacher forms of the Connors Scale. T tests indicated no significant difference between experimental and control groups, at pretest, on any of the four matched variables. The training programs involved three months of twice-a-week one-hour sessions for a total of 24 treatment sessions. In addition, six consultation sessions with the child's teachers and 12 sessions with one or both parents were held. Content of the training sessions centered around the modeling and self-verbalization procedures of Miechenbaum and Goodman (1969, 1971).

Dependent measures utilized in a pretest and posttest design were the MFFT, the Story Completion Test (Parry,

1973); Porteus Mazes (Porteus, 1969); Bender Visual-Motor Gestalt Test (Bender, 1938); memory tests from the Detroit Test of Learning Aptitude (Baker and Leland, 1967); four tests of the Durrell Analysis of Reading Difficulty (Durrell, 1955): oral reading, oral comprehension, listening comprehension, and spelling; the arithmetic subtest of the Wide Range Achievement Test (Jastak, 1946); and the Connors Rating Scales for Parents and Teachers, Short Form (Connors, 1969).

Statistical analysis involved an ANOVA Repeated Measures Design to assess overall group's X treatment interactions on pretest and posttest scores. A second multivariate analysis was performed on the pretest scores and on follow-up scores. Individual analysis of variance was utilized to test for group X treatment interactions on each of the ten variables on which test scores were available and to provide pretest and posttest and pretest and follow-up comparisons. T tests (two-tailed) were used to study pretest/posttest and pretest/follow-up changes within the training and control groups. Additionally, six variables had test scores available on only part of the sample. Those with partial data available received the same statistical treatment as the other ten variables. Results show improvement for pretest/posttest and pretest/follow-up groups on several dependent measures.

Interaction effects of overall group's X treatment were significant for the pretest/posttest comparison on the ten

variables in which full data was available (MFFT errors and latency, Story Completion Test, Porteus Mazes, Bender-Gestalt, four Detroit subtests). Interaction effects were not significant on the pretest/follow-up comparison. Individual analysis of variance of the pretest/posttest condition of the ten variables reflected significant interaction effects on the latency and error score of the MFFT, the Story Completion Test, and the time measure of the Bender-Gestalt. Pretest/follow-up individual interaction effects were significant on the MFFT and the Story Completion Test. Results on the six variables with missing data (Durrell Oral Reading, Comprehension, Listening Comprehension, and Spelling, the WRAT arithmetic subtest, and the Connors Teacher Rating Scale) indicate significant group X interaction effects in the pretest/posttest comparison on the Durrell Listening Comprehension Test. In the posttest/follow-up, condition significant group X treatment interaction effects were obtained with oral reading and oral comprehension subtests on the Durrell.

Significant improvement that was maintained over a three-month follow-up period appears to have been achieved on the MFFT, the Story Completion Test, and the Durrell Listening Comprehension and Oral Comprehension measures. One problem in interpretation is the degree to which results of the MFFT are generalized or task specific. This problem does not exist with the results obtained on the Story Completion Test or the two Durrell subtests. No training materials were

utilized that were similar in any way to the test activities. The training delivered to students on considering the consequences of events and of one's actions in social situations seemed to have a generalized effect on the ability of the children to cope less aggressively and more effectively with frustration. In addition, the attempts by the experimenters to get children to read written instructions and listen to oral instructions more carefully seemed to generalize the improvement in listening and oral reading comprehension tasks. A limitation of this study is the lack of an attention-control group. However, it seems unlikely that the extensive effects seen would be produced by attention alone, particularly since several improvements were maintained over a three-month period.

This particular study demonstrates the value of Meichenbaum and Goodman's (1969) and (1971) self-instructional techniques with seriously hyperactive youngsters. The technique involved training the youngsters to stop and consider the consequences of events and their own actions, to utilize a step-by-step approach to events or tasks and to verbally self-reinforce themselves through problem solving attempts. Latency and error scores were improved on the MFFT (Kagan, 1966) but more importantly, the treatment improved the youngsters ability to cope with frustration. The impulsive child's low frustration tolerance is important to this study's rational emotive conceptualization of impulsivity. The mechanism of improvement in

reaction to frustration seems to have been the use of coping statements (self-talk).

Camp et al. (1977) utilized the Think Aloud program to improve self-control in 6 to 8-year-old boys. The program involves modeling and verbalization of cognitive ability to foster use of verbal mediation skills in dealing with cognitive and interpersonal problems. Participants were 23 second-grade boys identified as aggressive on Miller's School Behavior Checklist (Miller, 1972). Students were randomly assigned to an experimental group of 12 and a control group of 11. In addition, a no-treatment control group of non-aggressive second-grade boys was also utilized. These children received only regular classroom instructions. Dependent measures utilized in a pretest/posttest design were the Block Design, Object Assembly, and Maze subtests of the Wechsler Intelligence Scale for Children-Revised (WISC-R) by Wechsler (1974) and a recording of private speech during the task. In addition, the Wide Range Achievement Test (WRAT) reading subtest by Jastak (1946), the Auditory Reception of the Illinois Test of Psycholinguistic Abilities by Kirk and McCarthy (1968), and the MFFT by Kagan (1966), with a recording of private speech, were utilized. The Preschool Interpersonal Problem Solving Test (PIPS) by Shure and Spivack (1974) was also given as a posttest only. Treatment sessions consisted of daily 30-minute individual sessions extending over six weeks. The procedures were very similar to those described by

Meichenbaum and Goodman (1971) and placed heavy emphasis on the modeling of cognitive strategies and the teaching of self-questioning techniques.

Statistical analysis involved a univariate analysis of covariance on individual test scores using the pretest as a covariate, and an analysis of discriminant scores derived from discriminant function analysis. Significant differences were found between the experimental and control groups of aggressive boys on reaction time on the MFFT, Reading Achievement, Salkind's Derivation of Impulsivity (Salkind, 1975) on the MFFT, and pro-rated performance IQ. These two groups remained similar in performance on object assembly and on their use of private speech to guide performance on the MFFT. Both groups were different from normal controls. In addition, the experimental group showed a trend towards less accurate performance on the MFFT than the normals. Analysis of variance on the pattern of test scores suggest significant interaction between time of discriminant score and treatment group. In addition, both experimental and control aggressive groups differed from the no-treatment control group at the posttest. The PIPS test results were analyzed using a one-way analysis of variance. The aggressive experimental group gave significantly more solutions to presented problems than either control group. However, they utilized a higher proportion of aggressive solutions. The program apparently helped them verbalize more solutions but not more constructive solutions to problems.

The accuracy of the Miller School Behavior Checklist (SBCL) in determining significant improvement in the aggressive experimental group was assessed by pretest and posttest t scores and an analysis of covariance on the posttest. No significant difference was found between the two aggressive groups, while the aggressive experimental group and normals differed only on the Aggressive Scale of the SBCL. Analysis of the average number of items improved upon on the SBCL by all the groups was completed using the Tukey test of difference between paired means. The two aggressive groups did not differ from each other, but did differ significantly from the normal-controls on the SBCL aggressive scale. The aggressive experimental group showed significantly more improvement on the SBCL Low Need Achievement Scale (LNA) than either control group. The two control groups did not differ significantly from each other.

Several confounding variables are apparent in this study. First, the teachers knew whether a child being rated on the SBCL was in the program or not. Expectation may have accounted for some of the improvement. Secondly, no reliability data is available for the SBCL. Despite these weaknesses, the demonstration of improved pro-social behavior in the classroom is encouraging. The pretest/ posttest differences on the LNA scale are large enough to be significant despite the possible unreliability. The third weakness of this study is the design itself which does not provide information on whether treatment effects are due to the type

of program or to increased individual attention.

The effect that CBM had on the performance of aggressive children on the LNA scale is important to the current study. This scale specifically measures indications of low motivation, failure to master difficult tasks and a defeatist attitude. It also assesses the individual's level of task avoidance by measuring failure to carry out homework and seatwork. The total scale is said to reflect the overall lack of ambition of a youngster in school (Camp et al., 1977). The suggestion herein is that the cognitive modeling approach, the use of verbalizations to guide performance, and fading to covert self-talk, may reduce the helpless, nothing-I-can-do attitude of children with cyclic failure and impulsivity problems. The Think Aloud program is based on the idea that impulsive youngsters have failed to develop internal self-guiding speech which is necessary for the verbal mediation of nonverbal behavior (Camp and Bash, 1981). The difference in this approach and RET is that: RET theorists assume the individual does have internal speech but is unaware of it or its irrationalities, which result in impulsive behavior.

Kendall and Finch (1978) studied the use of self-instructional training with modeling and response-cost contingencies with in-patients at a children's psychiatric hospital. Participants were 20 children with a mean age in the treatment group of 10.2 years and a mean age of 11.1 years in the overall group. Subjects were randomly assigned

to either a cognitive behavioral treatment group or to the control group. Treatment consisted of six sessions of 20 minutes each. Dependent measures were used in pretest, post-test, and follow-up assessment periods. Tests included the MFFT by Kagan (1966) and two self-report scales, including the Impulsivity Scale (IS) by Sutton-Smith and Rosenberg (1959) and the Impulse Control Categorization Instrument (ICCI) by Matsushima (1964). In addition, two rating scales were utilized. These were the Impulsive Classroom Behavior Scale (ICBS) by Weinreich (1975), completed by teachers, and the Locus of Conflict (LOC) by Armentrout (1971), completed by teachers and unit personnel. Statistical analysis was accomplished by employing a separate 2x3 analysis of variance for MFFT latency and error measures and a t-test to assess simple effects. The same type of analysis was implemented with the IS, ICBS, and LOC. Results suggest that the cognitive training employed in this study successfully increased latency and reduced errors on the MFFT, and that this generalized to the classroom setting as shown by teacher behavior ratings. Also, neither of the self-report indices changed due to treatment. The implication is that behavior change may occur without first altering self-perceptions. However, an equally plausible explanation is that self-report scales may be of limited utility in treatment research with children because they are relatively insensitive to change.

A study by Burnstein (1980) concerned the relationship

between children's aggressive behavior and the cognitive variables of conceptual tempo and problem solving skills. It is hypothesized that when aggressive children are confronted with an uncertain situation, they tend to respond impulsively. This impulsive style is incompatible with the use of more effective verbally mediated problem solving of the type presumed to underlie social adjustment. Burnstein compared normal and aggressive children on several measures in a nonexperimental setting. He also utilized an experimental approach which involved comparing the use of two interventions with aggressive boys and an assessment control group. One approach consisted of training subjects to cognitively guide their behavior during problem solving, while the other utilized contingency management of behavior.

Non-experimental findings were that one cannot accurately predict a child's social adjustment from the simple knowledge of cognitive style or level of problem solving competence. The major difference between aggressive and normal boys involved the type of social-cognitive problem solving strategies selected. Aggressive boys relied on forceful solutions in hypothetical social encounters, while normal boys were more flexible.

Experimental findings supported the use of cognitive behavior modification as a lasting way to modify aggressive behavior. Shortly after treatment, both the cognitive group and the operant group were rated by teachers as behaving less aggressively, but at a follow-up assessment, only the

cognitive group continued to show a decrease in aggressive responses.

Siddle (1980) utilized cognitive behavior modification to train 23 LD/EH adolescents, ages 12 to 16, in interpersonal problem solving skills. Cognitive strategies were taught in twelve 40-minute sessions held twice a week. Strategies were taught through didactic presentation, modeling, and practice. A verbal self-instruction procedure was employed to develop a cognitive set conducive to problem solving and to reduce impulsive responding and withdrawn behavior. A token economy was utilized to reinforce verbalization of cognitive strategies and to penalize inappropriate responses. Subjects applied the problem solving training to personal problems during in-vivo practice. Assessment was conducted immediately after treatment and at a one-month follow-up using the Matching Familiar Figures Test (Kagan, 1966) and the Means-End Problem Solving Procedure (Platt and Spivack, 1975). Results were not significant when comparing experimental and control groups. However, trends of improvement were noted by follow-up when compared to the posttest.

Research to this point in the review has been favorable with regard to Cognitive Behavior Modification (CBM). Both Miechenbaum and Goodman's (1969, 1971) approach and the Think Aloud techniques of Camp and Bash (1981) have been supported.

Kupietz (1980) has found fault with the state of re-

search on CBM. She concludes that the research on CBM is hampered by poor research designs and a lack of confirming literature on its usefulness. Henker et al. (1980) agree and indicate that there is no proof that CBM increased the generalization effects of behavior modification. In addition, Henker et al. (1980) relate that claims of improvement in an individual's perception of self-competence are assumptive.

Kupietz (1980) also suggests that replication of CBM studies are difficult because of poor descriptions of materials and techniques. She attempted to overcome some of the problems mentioned above in her 1980 study. Kupietz (1980) investigated the use of CBM with 30 second-grade and third-grade students classified as impulsive or learning disabled. She defined CBM as a treatment that deals with maladaptive thoughts and self-statements that are thought to cause inappropriate behavior. Kupietz focused her research on what type of self-statements are necessary to produce the best effects. Specifically, she studied concrete instructions or self-statements that are to be repeated verbatim as opposed to conceptual instructions. Conceptual instructions are designed to promote understanding, while giving the subject maximum freedom in adapting the self-statements to other tasks using his or her own words. A second question investigated by Kupietz concerns the effectiveness and generalization of the CBM method. In the study Kupietz utilized a 2x3x3 factorial design with one

factor representing the treatment condition; one, subjects; and the third, an observation factor. The CBM treatment method was derived from a program manual devised by Kendall, Bream, Herzog, Padawer, and Zupan (1979). The second group was given the same training materials but without the CBM method and without the response-cost reward system incorporated in the Kendall et al. (1979) manual.

Dependent measures included the MFFT by Kagan (1966), the Porteus Maze Test (PMT) by Porteus (1969), the Wide Range Achievement Test (reading section) by Jastak, Bijou and Jastak (1978), and the Gates-MacGinitie Reading Test by MacGinitie (1965). Subjects were also tested with a Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965). No one under a 75 IQ participated in the study. In addition, teachers were asked to rate the children on a Self-Control Rating Scale by Kendall and Wilcox (1979) at each assessment period. Children were randomly assigned to the treatment conditions, and then within-condition groups were formed based on reading level. Each group of five received twelve 30-minute counseling sessions over an eight week period. Results in general do not support the use of verbal self-instructions with learning disabled or impulsive youngsters. Instead, the results suggest that the extra attention and remedial help given as a base to all of the children in the study was equally effective as the experimental treatments. There was no difference found between the different treatments, nor between the different types of samples. In addition, there

was no behavioral generalization of the treatment to the classroom. Interestingly, all groups improved equally on the measure of impulsivity, regardless of the CBM technique and regardless of whether the experimenter utilized concrete or conceptual instructions. The suggestion is that the types of activities and materials utilized in the Kendall et al. manual (1979) are effective in and of themselves. Kupietz (1980) studied the Kendall et al. (1979) materials and concluded that the activities teach the student to think carefully before responding, to carefully recognize the details of questions, to delay responding, and to plan responses. The effectiveness of these materials, therefore, has been demonstrated.

Kupietz (1980) also reasoned that her results are contrary to those of other CBM studies due to several facts. First of all, she states that some previous studies utilized a no-contact control group. This, according to Kupietz, confounds the results because one cannot separate the effects of time on the training materials themselves from the intervention technique of CBM. Secondly, the training materials used by many other investigators are not adequately described and, therefore, cannot be replicated, whereas Kupietz indicates that she used a published experimental manual. Third, according to Kupietz, is the group size involved in her study as compared to other research. Kupietz states that the majority of other studies utilize a smaller sample and one-to-one instruction. According to

Kupietz she utilized groups of five because that is a more realistic situation for remedial settings. This, however, is also a weakness in the study. Many of the children in the study were considered to have discipline problems. Therefore, some of the treatment time in each session was spent on discipline which cut the 30-minute sessions to 20 to 25 minutes. Kupietz feels that this was the most handicapping variable in her study.

Summary

Finch et al. (1975), Douglas et al. (1976), Camp et al. (1977), Kendall and Finch (1978), and Burnstein (1980) confirm the utility of cognitive behavior modification (CBM) in modifying impulsive cognitive style in emotionally handicapped children. In addition, Finch et al. (1975) found CBM equally effective with delayed response training on improving latency to response on the MFFT. Improvement of error scores on the MFFT was found only in the CBM group. This finding with regard to the MFFT was supported by Douglas et al. (1976) with a broader range of ages and a longer treatment period. Camp et al. (1977) found the same results with a similar age range and a slightly shorter treatment length than Douglas et al. (1976). Kendall and Finch (1978) found that CBM procedures successfully reduced error scores and increased latency on the MFFT. Burnstein, et al. (1980) confirmed the utility of CBM using

nonexperimental procedures.

Douglas et al. (1976) found positive effects of CBM on academic measures including oral reading, oral comprehension, and listening comprehension. In addition, he found improvement in teachers' ratings of overt behavior. Similarly Camp et al. (1977) found some improvement in reading achievement, impulsivity and pro-rated WISC-R performance IQ. She also found improvement in school behavior, as measured by the Miller School Behavior checklist. Kendall and Finch (1978) found improvement in teachers' behavior ratings of impulsivity after students completed CBM training.

The results of the two studies on children identified as learning disabled are equivocal. Kupietz (1980) failed to find significant treatment effects using CBM in academic, impulsivity, and behavioral areas. Kupietz pointed out that she utilized more rigorous control than most previous studies, utilized small group instruction rather than individual instruction, and that the materials from the Kendall et al. manual (1979) were successful by themselves without CBM. Siddle (1980) failed to find significant differences between experimental and control groups after CBM training. She did report a trend toward improvement when a follow-up test was compared with the posttest.

These findings suggest the possibility that learning disabled and emotionally disturbed students respond somewhat differently to CBM training. Further investigation using

Kendall et al.'s, (1979) manual with emotionally disturbed children with and without CBM would be useful.

The success of CBM seems to be due to the use of self-guiding, self-reinforcing coping statements while approaching problems in a step-by-step manner. This approach is similar to techniques of RET. In RET the individual is made aware of irrational self-talk and is led through a process of challenging the irrational underlying beliefs. Once this is accomplished, individuals are assisted with the discovery of more rational self-statements that match their new beliefs. Direct action and utilization of these new self-statements is then encouraged in a variety of real and in-vivo experiences (Ellis, 1962).

This author suggests that challenging the irrational underlying beliefs of impulsive youngsters and practicing the use of these new beliefs in a variety of settings might improve the generalization problems of CBM. The development of a comprehensive manual of materials, as in the present study, also seems necessary.

Rational Emotive Therapy and Theories of Causation

The literature on cognitive styles suggests that the individual's method of structuring and making sense out of information is important when considering research on impulsivity. As stated previously, much of the research has

focused on correcting inefficient strategies of information processing. The result has been the neglect of research that attempts to understand the role of beliefs and internal thought that RET theorists suggest as underlying impulsivity.

In the RET conceptualization, impulsivity arises from an innate drive towards short range hedonism. This translates into low frustration tolerance when a person demands immediate gratification, fails to obtain it, and then acts out. The irrational, absolutistic beliefs that undergrid impulsivity are reflected in all-or-none dichotomous categorization of all experiences and overgeneralization. That is, once a negative event occurs, it will be repeated endlessly. In addition, the individual's beliefs are obvious by his or her irrational demanding reflected in "I must" and "I should" self-talk (Ellis and Knaus, 1979).

According to RET, self-talk is a true indication of the underlying belief system; therefore, statements such as "I must be perfect," or "I must not make mistakes," are believed and acted upon by the individual (Ellis and Knaus, 1979). The trigger to this whole system of irrationality is in the individual's perception of events. It is in this area of perception of events that theories of causation seem to contribute. Ellis, Moseley, and Wolfe (1977) suggest that blame-seeking when one does not live up to an irrational belief is a mechanism of impairment in many emotional disorders. The idea of blame-seeking, either against

oneself, others, or perhaps task characteristics or event circumstances, suggests assignation of cause is taking place within the individual.

This assignation of cause can be viewed from a number of perspectives, including Rotter's (1954) internal-external locus of control and subsequent refinements proposed by Weiner and Frieze (1974); Abramson, Seligman, and Teasdale (1978); and Henker, Whalen, and Hinshaw (1980). Each of the aforementioned refinements discuss attributional styles that are considered to be perpendicular to internal-external locus of control. Each is also related to the development of expectancies for success and failure. Attributions merely predict the recurrence of an expectation (Abramson et al., 1978). Expectations are learned and are determining factors in an individual's behavior (Rotter, 1954). Expectations are also subject to change with the incorporation of new information (Abramson et al., 1978).

Locus of Control

According to Kassino, Crisci, and Tiegerman (1977), the irrational belief held the most frequently and the longest developmentally concerns control. Specifically, the belief is that other people have control over a person's life and determine whether he or she is happy or unhappy. The similarity of this irrational belief with Rotter's (1954) social learning theory is obvious. Rotter suggests

that locus of control is a one-dimensional personality construct.

Individuals having internal locus of control believe that life's reinforcements are regulated by personal effort. External locus of control individuals believe that their reinforcements are controlled by powerful significant others, by luck, or by chance. Both relate to RET and the current research paper. Averill (1973) suggests that if an individual spends substantial time with no perceived control over events or in an unpredictable situation, then a generalized belief of being externally controlled develops. Lefcourt (1976) indicates that internal control is significantly related to the ability to delay immediate gratification and to endure the tension associated with delay. Conversely, external control is associated with a lack of persistence and an inability to resist temptation (Wolk and Bloom, 1978).

In addition, Lefcourt (1976) indicates that external locus of control individuals have a high need for the approval of others. Therefore, they react to and acquiesce to the judgements of others.

According to Feather (1968), externally controlled individuals react to success by adjusting their expectancy for further success downward. Internal control individuals react to failure by adjusting expectancy upwards.

Several elements of a rational emotive conceptualization of impulsivity are mentioned above, specifically,

inability to delay immediate gratification or endure the tension associated with delay (Lefcourt, 1976); and inability to resist temptation and a lack of persistence in effort (Wolk and Bloom, 1978). In addition, externally controlled individuals tend to make decisions based on the influence of other people. This thematic similarity between rational emotive impulsivity and Rotter's (1954) theory has not been specifically addressed by research. However, even though direct experimental research on a rational emotive theory of impulsivity is lacking, there is empirical research on RET and locus of control. These specific studies are reviewed in detail later in this paper.

Attribution Theory

Weiner (1972) has refined the interpretation of expectation hypothesized by internal-external locus of control by adding the dimensions of stability and variability. Weiner (1979) indicates that there are four major causal perceptions. They are ability, effort, task difficulty, and luck. These perceived causes are affected by underlying beliefs regarding stability or variability. Andrews and Debus (1978) suggest that the key to the attribution model of achievement is the assumption that causal beliefs about success and failure experiences have important consequences for subsequent feelings, expectancies, and behavior.

Abramson et al. (1978) have added a further refinement in a reformulation of learned helplessness which partitions helplessness into universal and personal. Universal helplessness would be experienced in the case of a terminal disease. Personal helplessness, on the other hand, occurs only after unsuccessful trying. Both types of helplessness are the result of realizing that certain outcomes and responses are independent.

For example, an individual tries hard in school but fails anyway and begins to believe he or she is stupid and eventually gives up trying. The individual realizes that his or her efforts and passing in school are unrelated and assigns the cause to an "I am stupid" attribution (internal personal helplessness). This type of attribution lowers self-esteem and creates an expectation of failure on the next related task.

If the individual also concludes in this task that the outcome will be independent of response, then the individual is developing a global attribution. That is, he or she is generalizing personal helplessness across situations. Global helplessness can occur due to attributions that concern low ability or lack of intelligence, a physiological condition, such as fatigue, or perceived task difficulty (unfair) and luck.

Henker et al. (1980) suggest two other dimensions of cause that are particularly applicable to handicapped children. These are the extent to which causes are seen as

mutable (easily changed or modified) and predictable (causal processes which operate in lawful ways). Henker et al. (1980) believe that children who perceive causes as easily modified are more likely to attempt new behaviors that interrupt automatic maladaptive behaviors. The reverse is true when outcome beliefs are unpredictable. In relation to handicapped children, incompetent performance is given a name such as mentally retarded. From this, others conclude the problem is not the individual's fault. However, this label also suggests that causes are not easily changed and this may generate low expectancies of success. Moreover, when success occurs it is attributed to causes external and beyond personal control and therefore unlikely to occur again. The affixed label then becomes both the source and solution of the individual's problem. When this happens, both parent and child may decide that efforts on their part to work on elements of the disability are futile.

The relationship of attribution theory to a rational-emotive conceptualization of impulsivity may be in expectancies. As stated, expectancies are learned and are determinants of behavior.

Burns (1980) suggests that parents emphasize during pre-school and early school-age years the importance of success in school. In addition, teachers, as well as peers, reward success and punish patterns of mistake-making in some manner (Kagan, 1966). The child may quickly develop the belief that "I must succeed or be worthless" (Burns, 1980).

When one examines this belief in relation to irrational "must" and "should" statements, (Ellis and Knaus, 1979) concerning frustration, perfectionism, failure, and mistake making, the meaning is essentially the same.

If the individual then attributes the cause of his or her lack of success to internal global ability or external task difficulty or luck, then personal, learned helplessness develops. This reduces adaptive performance and the likelihood of accurate performance on the next task. The irrational belief that a negative event will be repeated endlessly causes the individual to dogmatically assert that once he has failed, he will always be a failure.

This conceptualization does not mean that complete failure must occur before symptoms of helplessness and impulsivity occur. Realistically, failure is rarely complete, particularly when dealing with handicapped populations in special education programs. Henker et al. (1980) suggest that traditionally, teachers seek to minimize the occurrence of failures by careful structuring of training tasks and by individualizing instructional goals.

What may be occurring in handicapped impulsive populations is absolutistic cognition about all failures. That is, the individual in an all-or-none manner thinks irrationally that he or she must either succeed completely (i.e., be perfect) on tasks or he or she is an emphatic failure.

The relationship of rational emotive theory concepts to

attribution theory has been suggested but not adequately empirically verified. Andrews and Debus (1978) indicate that research in support of attributional therapy is sparse. However, they indicate that existing therapies such as Rational Emotive Therapy (RET) and Cognitive Behavior Modification (CBM) support its use. According to these authors, the main difference in approach involves what the therapist is trying to change.

For example, RET and CBM therapists are seeking to re-attribute events, while Attribution Theory attempts, through reinforcement, to get the individual to change the causal self-perception he or she holds concerning success and failure. The change would be from an internal ability attribution to an internal effort attribution.

Försterling and Garfinkel (1981) have conducted the only direct empirical study of the relationship of RET to Attribution Theory. They randomly assigned 82 college students to one of two groups. Both groups were presented two stories. The first read a story involving a male character who worked and succeeded at an important task. Next, a second story was presented which depicted a male who failed at an important task. For the first group the character was described as having an irrational belief about the outcome of his work. This belief was described as, "I must succeed at this task." In the second story the individual was described as holding the rational belief, "I would like to succeed." This order was reversed for the

second group of students.

The stories with successful outcomes were followed by a list of 48 words describing positive affective states. The stories with unsuccessful outcomes were followed with a list of 98 words describing negative affects. Subjects were told to carefully read through the stories and rate them on a seven-point scale according to the intensity of feeling that each character might experience.

The results were analyzed using a two-tailed t test. The authors found that negative affects following failure are experienced more intensely when irrational cognitions (musts) are present. The difference was significant at the .001 level for 57 affects, at the .01 level for 13 affects, and at the .05 level for 14 affects.

Försterling and Garfinkel (1981) conclude that a basic hypothesis of rational emotive therapy (RET) has been supported. That is, the experience of negative emotions following failure is more intense when irrational cognitions (must statements) are held about the attainment of a goal. They suggest that studies concerning achievement motivations (Attribution Theory) need to focus on the rational and irrational cognitions proposed by RET.

It is clear from this author's view that studies utilizing a rational emotive approach as a fundamental part of success and failure attributions are lacking. The absolutistic thinking that is a key conceptual element of this study seems to be present in attributions that lead to

learned helplessness and in a rational emotive conceptualization of impulsivity. Perhaps this area of similarity can be a basis for additional research. Both theories are in need of a great deal of empirical verification. Contrary to Andrew and Debus (1978) this author found a lack of adequate empirical research on Rational Emotive Theory (RET). The next section consists of a review of research on RET that seems related to the current study.

Studies of Rational Thinking Techniques Employed with Normal Child Populations

Studies of particular interest with normal children included those by Knaus and Bokor (1975), Harris (1976), Miller and Kassino (1977), and Ribowitz (1979).

The Knaus and Bokor (1975) study involved a population of 54 inner city students 11 to 13 years of age. Students were all reading at or below the nineteenth percentile on the Metropolitan Achievement Test. The purpose of the study was to assist students in developing a more positive self-concept and to reduce test anxiety. Subjects were randomly assigned to three classroom groups, namely, a Rational Emotive Education (REE) group, a Self-Concept Enhancement (SCE) group, and a No-Treatment Control (NTC) group.

The teacher for the REE treatment group volunteered because of an interest in the technique and subsequently received three hours of training in the REE technique plus ten minutes per week of supervision. A manual developed for

teachers by William Knaus (1974) served as a program guide for the REE group. The SCE teacher received three hours of training and no follow-up supervision.

Students were instructed 10 to 30 minutes per day, three days per week, and were involved in a total of 85 sessions. Dependent measures utilized in a posttest only design included the Coopersmith Self-Esteem Inventory (Coopersmith, 1967) and the Sarason Test Anxiety Scale (Sarason, 1960). Statistical analysis involved a 2x3 fixed analysis of variance.

Results indicate that the REE technique is more effective in enhancing self-concept than the SCE program designed specifically for self-concept enhancement. Both REE and the SCE techniques are equally effective at reducing test anxiety. Statistical analysis also revealed that the girls in the study were reflecting significantly more test anxiety than the boys. Confounding variables in this study included the assignment of students with behavior problems to the REE classroom during the treatment phase of the study, use of a different control group in the parallel SCE study, and the administration of the Piers-Harris Self-Concept Scale (Piers and Harris, 1969) to the SCE group rather than the test used with the REE group. This study also has limited generalizability due to the small N and the fact that only inner city minority students were included in the sample population.

Harris (1976) compared the Human Development Program

(HDP) with the Rational Emotive Education (REE) program. The purpose of the study was to compare the effectiveness of the two techniques in promoting rational thinking, knowledge of REE content, internal locus of control, self-acceptance, self-confidence, growth of self-awareness, personal effectiveness, and tolerance. Participants were 65 fifth-grade and sixth-grade volunteers (30 boys and 35 girls). Subjects were randomly assigned to two REE, two HDP, two attention-placebo, and two no-treatment conditions. All groups were conducted by certified counselors. Activities in the REE leader's manual by Knaus (1974) and Kranzler (1974) as well as materials developed by the author were organized into 15 REE lessons. Fifteen lessons of the HDP program were also utilized. The attention-placebo group had the same number of contact hours with counselors (fifteen 25-minute sessions in eight weeks) but did art activities, puppets, math, and word games. The no-treatment students had no contact with counselors. Dependent measures utilized in a posttest only format included the Inventory of Rational Thinking (Harris, 1976), a test of Rational Emotive Education Content (Knaus, 1974), the Bialer-Cromwell Children's Locus of Control Scale (Bialer, 1961), a shortened version of the Lipsit Self-Concept and Ideal Self-Discrepancy Scale (Lipsitt, 1958), and four scales of the HDP Developmental Profile (Ball, 1970). Statistical analysis involved analysis of variance on the posttest measures.

Results indicate that fifth-grade and sixth-grade students are able to learn REE content. Also, one REE group (the author's group) scored higher than the other REE group on a measure of rational thinking. This difference, however, was not maintained on a second posttest four weeks later. There were no significant differences among any of the groups on measures of self-acceptance, locus of control, or on the HDP developmental profile. However, one REE group (the author's group) scored higher on the locus of control measure than the other REE group. Further, girls were found to be significantly higher than boys on measures of self-awareness, self-confidence, effectiveness, and tolerance.

A major confounding variable in this study is experimenter bias. The author-conducted REE group had the advantage of working with the most experienced counselor. In addition, the author knew the content of criterion measures and administered the posttests. Significant approach differences are also noted between REE groups. The author employed more directive techniques, emphasized obtaining the correct responses, and worked with individual students an extra amount of time between sessions. Not surprisingly, the author's REE group learned more.

Miller and Kassino (1977) conducted a study to determine the effectiveness of REE lectures and components of behavior rehearsal and written homework. They hypothesized that REE groups would show less neuroticism and trait

anxiety than a no-contact control group. They also hypothesized that behavior rehearsal and written homework would have an additive effect when combined with REE. Finally, they also hypothesized that higher IQ groups would show greater change towards rational thinking, less neuroticism and lower trait anxiety than would lower IQ children. Participants were 96 fourth-grade, middle class students in a Catholic school. Students were divided into two groups by mean IQ. The high group averaged 125 IQ, and the low group averaged 102 IQ. The lowest student IQ was 85. Both groups were represented in a 4x2 (Treatment x Intelligence) pretest and posttest unequal N's design. Treatment groups included a Rational Emotive Education (REE) group, an REE plus behavior rehearsal group, and an REE plus behavior rehearsal and written homework group. Children in the three REE conditions were taught by the first author for one hour, one day a week for a total of twelve weeks. The children in the no-contact control group remained in their regular class. Dependent measures included the Idea Inventory by Kassino, Crisci, and Tiegerman (1977); the Children's Survey of Rational Beliefs by Knaus (1974); the Eysenck Personality Inventory by Eysenck and Eysenck (1965); and the Trait Anxiety Scale of the Children's State-Trait Anxiety Inventory by Spielberger et al. (1973). Statistical analysis was accomplished on difference scores by utilizing analysis of variance on each dependent measure. A Duncan's Multiple Range Test by Duncan (1955) was used to analyze the

difference between treatment and control groups. Results suggest that all three REE treatment methods are successful in helping students acquire rational emotive principles. In addition, when testing with the Idea Inventory, the REE plus behavior rehearsal and written homework group changed a significantly greater amount than the other two treatment groups. Children with higher IQs had higher scores but did not reach significance when compared to children with lower IQs when tested on Rational Emotive Therapy RET content acquisition using either the Idea Inventory or the Childrens' Survey of Rational Beliefs. Other results indicate that all three REE groups experienced a significant reduction in neuroticism when compared to the no-contact control group. Again, the REE plus behavior rehearsal and written homework group had the strongest effect on neuroticism. Also higher IQ children had higher scores but did not reach significance when compared with lower IQ children on reduction in neuroticism. The results on reducing trait anxiety indicate that only REE plus behavior rehearsal and written homework or REE plus behavior rehearsal produced significant changes. The REE alone group was not different from the no-contact control group. IQ effects were not significant with regard to trait anxiety.

Conclusions of this study support the use of REE with behavioral components as a preventive mental health program. In addition, the author suggests that intelligence does not appear to be related significantly to treatment effective-

ness. Limitations of this study include the lack of truly low IQ children in the experimental population. Miller and Kassino (1977) suggest that research using emotionally disturbed and truly low IQ students is needed. They also suggest that research using assessments other than, or in addition to, self-report indices would provide support to the teaching of rational emotive concepts. A second limitation seems to be the use of all parochial school students. It is questionable whether this group can be taken as representative of a normal school population and limits the generalization of results.

A study by Ribowitz (1979) investigated the effectiveness of REE with fourth-grade children of higher and lower emotional adjustment. In addition, Ribowitz examined the differential effects of REE plus written homework and duration of treatment (i.e., 7 and 14 sessions). Fifty-nine children in a parochial school were randomly assigned to one of three groups. These were REE lectures, REE lectures plus written homework, and a no-contact control group. The children were divided into high and low emotional adjustment groups based upon a mean split of their pretreatment neuroticism scores. Participants were tested after seven weeks of treatment and again after 14 weeks of treatment. Dependent measures included the Idea Inventory by Kassino et al. (1977); the feeling, thought and behavior scale of the Reaction to Stress Form by Evans and Hearn (1973); the Trait Anxiety Scale of the Children's State-Trait Anxiety

Inventory by Spielberger et al. (1973); and the neuroticism scale of the Eysenck Personality Inventory by Eysenck (1965). The first hypothesis stated that the subjects in REE plus homework would do significantly better than the no-contact group after 7 and 14 weeks of treatment. The second hypothesis stated that REE plus homework would be significantly better than REE alone after 14 weeks of treatment. The third and fourth hypotheses predicted interaction between treatment type and duration and between high and low emotional adjustment. Statistical analyses involved a 3x2x2 analysis of covariance with pretest scores used as a covariate. Duncan's Multiple Range Test by Duncan (1955) was used to analyze differences among the means. The results support the contention that REE content can be learned by fourth grade students. However, support was not found to indicate that the acquisition of rational emotive concepts would lead to enhanced emotional adjustment. The children experiencing REE did not differ from the no-contact control group on measures of negative emotion, anxiety, and neuroticism at either 7 or 14 weeks of treatment. In addition, children in the REE plus homework group showed less difference than REE alone. This was thought to be the result of negative attitudes toward written homework. Conclusions of this study were that fourth-grade children can learn REE content and that initial level of emotional adjustment was not found to be important in treatment effectiveness.

The primary weakness of this study was in the use of all parochial school students. It is questionable whether this group can be taken as representative of a normal school population and limits the generalization of results. In addition, the failure to find a difference in high and low emotional adjustment groups suggests that the groups were too much alike. The results may have been different if subjects had been emotionally or behaviorally disordered.

The studies previously cited conclude that rational thinking principles can be taught successfully to children in grades four through six. All four studies utilized activities in Rational Emotive Education (REE) in their treatment groups. However, the effects of REE on emotional adjustment are equivocal. Knaus and Bokor (1975) found significant improvement in self-concept and test anxiety using REE with inner city minority students. Harris (1976) failed to find significant improvement on measures of self-acceptance and locus of control in fifth and sixth grade students who volunteered for the counseling sessions. Miller and Kassinove (1977) found significant reductions in neuroticism and trait anxiety in a group of high and low IQ parochial school students. They also found that IQ is not significant with regard to content acquisition and that REE plus behavior components (rehearsal and written homework) seems to provide the best treatment method. Ribowitz (1979) utilized REE with fourth grade students classified as high and low emotional adjustment. He failed to find that REE

alone or with written homework would significantly reduce negative emotion, trait anxiety, and neuroticism. The equivocal findings of these studies with regard to improvement of emotional adjustment appear to be due to design problems including limitations inherent in the population samples used. Research on identifiable clinical populations is needed to clarify the effectiveness of Rational Emotive Education methods.

Studies of Rational Thinking Techniques Employed
with Clinical Cases, Undiagnosed, or Mildly
Handicapped Populations

Studies by DeVoge (1974), Maultsby, Knipping, and Carpenter (1974), DiGiuseppe (1975), Knaus and McKeever (1977), Patton (1978), Block (1978), Wasserman and Vogrin (1979), and Meyer (1981) basically suggest that a variety of rational emotive techniques can be successfully utilized with mildly handicapped populations.

DeVoge (1974) felt that children could be taught a new attitude language even after a neurotic belief system had been instilled by their environment. To test this, she proposed and tested a method of teaching disturbed children a rational system of thinking. DeVoge felt that children who were strongly and consistently rewarded for verbal expressions of rational thinking would gain more control of their behavior than those who were not so reinforced. To study this, DeVoge worked with 14 children between the ages of 8

and 13 years who were housed at a children's unit of a state hospital. None of the children were mentally retarded, and each was randomly assigned to either Group A or B. Group A was reinforced for rational thinking statements, while Group B was reinforced regardless of how rational their statements happened to be. All children continued to receive the same milieu treatment and to attend school regularly. The treatment continued for four weeks, and results were not statistically analyzed. Descriptive trends were noted by isolating each Group A and B student's major problem in the hospital and comparing changes and progress in each group as observed by the nursing staff, who were unaware of the group affiliation of the youngsters. Results were that at the end of the four week period, it appeared that consistent and exclusive reinforcement of rational statements resulted in change towards more self-controlled behavior. Group A was noted by staff to be calmer and consistently less upset by frustrations, personal rejections, and failures than Group B. In addition, by the end of the study three of the Group A children were considered by the staff to be sufficiently in control of their behavior to recommend their dismissal. None of the Group B children attained this level of control. A limitation of this study was the lack of statistical analysis. However, despite this, there is enough descriptive information contained in the study to assure one of the power of reinforcing rational self-statements in even a severely disturbed hospitalized population.

DeVoge (1974) was successful in reducing the anxiety and upset that resulted from frustration, personal rejection, and failure. Although impulsivity is not mentioned directly, each of the aforementioned behaviors are thought to underlie a rational emotive conceptualization of impulsive behavior. DeVoge's technique is similar in method and content to Cognitive Behavior Modification (Meichenbaum and Goodman, 1969). It is similar in method to attribution therapy but not in the content of what was taught.

Maultsby et al. (1974) studied the effectiveness of rational emotive therapy with adolescent emotionally disturbed students. Participants were two classes of emotionally disturbed high school students. One group received the rational emotive therapy program developed by Maultsby (1974), while the other group served as a no-contact control group. Both groups received several personality assessment scales in a pretest and posttest design. Dependent measures were the Rotter Internal-External Locus of Control Scale (Rotter, 1966), the Personal Orientation Inventory (Shostrom, 1976), and the Maultsby Common Trait Inventory (Maultsby, 1974). Statistical analysis indicated a significant positive difference between experimental and control groups on all three measures. The experimental group experienced an increase in internal control, improvement in both self-awareness and self-exploration, and a decrease in the number of irrational ideas endorsed.

DiGiuseppe (1975) utilized behavioral techniques of modeling, fading, and reinforcement in combination with the teaching of rational emotive principles. He reported the use of this procedure with two disruptive special education students. One student, 12 years of age, was referred for continual fighting with his brothers who reportedly were calling him names, and for extreme anxiety in class. Another was a seven year old boy with low average intelligence, referred for aggressive disruptive behavior. This boy also acted out, mostly when he was called names by peers. The technique applied in the treatment of these children involved teaching the child that his thoughts were upsetting him. Role playing and role reversal was utilized next by the therapist to give an opportunity for modeling appropriate rational self-statements. Next, the child was asked to say the previously verbalized statements aloud. If the child experienced difficulty with repeating the rational self-statements, a shaping procedure was employed with reward given for successive approximations. Once rational self-statements were established a fading procedure was used. This process involved the child's repeating the self-statements, but on each trial lowering his voice until he is repeating them covertly. A description of the results with the 12-year-old indicates that a rational response to the name calling was achieved, and the fighting stopped. The same was true when the behavioral principles were applied to his anxiety in class. This youngster was not, however, able

to benefit from sessions where his irrational beliefs were disputed. In the case of the seven-year-old, the teaching that thoughts were upsetting him failed, as did the operant techniques. The child did respond to the role playing and role reversal, and after six half-hour sessions plus reinforcement for periods of non-aggressive behavior, his disturbing behaviors disappeared.

A limitation of this study is the fact that it was a descriptive, rather than an experimental study. Nevertheless, the idea of using the technique of teaching rational self-statements through role playing, role reversal, and reinforcement is a good one. The approach of this particular study is similar to Cognitive Behavior Modification (Meichenbaum and Goodman, 1969) in both content and technique. Although impulsivity is not mentioned, the study does report success with changing irrational thoughts concerning frustration and anxiety. Therefore, the success in teaching these two special education students to respond in a more rational manner to name calling and anxiety seems appropriate to the current research.

A study by Block (1978) adapted Rational Emotive Education (REE) techniques developed by Knaus (1974) for use with adolescents. Block worked with 40 senior high behavior-disordered youth. He utilized intense discussion groups for five sessions a week for one semester. The focus of the training was on cognitive restructuring which included: practice in rational appraisal, in-vivo activity exercises,

small group directed discussions, and affective homework assignments. The study involved training discussion leaders who did not know the experimental hypotheses. The hypotheses stated that a systematic rational emotive educational approach with high risk, failure, and misconduct-prone black and Hispanic males and females would positively influence the dependent variables of grade point average, class cutting, and social behavior. Block utilized a sample stratified by sex and randomly assigned to three treatment groups: the rational emotive education group, a human relations group that emphasized the awareness of psychodynamic principles that utilized a "my earliest memories technique" with reflective listening, and a no-treatment control group. Statistical analysis was obtained through the use of a 3x3 factorial design analysis of variance. A Scheffe's test was utilized to assess posttreatment and follow-up results.

Results were that the rational emotive education participants had significantly higher grade point averages, significantly fewer incidents of disruptive behavior, and significantly lower amounts of class cutting than the human relations and waiting-list control participants at both posttreatment and follow-up.

This study did not employ multiple measures of the psychometric variety, and this may be a weakness. However, it does establish the credibility of REE for use with low socio-economic, minority adolescents who are acting out.

Perhaps more importantly, the use of REE resulted in improvement of easily observable but important criteria used by communities to measure student and school success, i.e. grade point average and truancy. This particular study also did not mention impulsivity, however, the decisions made by students to cut classes and disrupt classrooms when in attendance at school certainly does not represent reflective thinking. The study does address a key conceptual element of impulsivity from a rational emotive viewpoint. That element is failure. The use of REE techniques with failure prone students is supported.

Knaus and McKeever (1977) used the principles of Rational Emotive Education (REE) to teach learning disabled youngsters to cope with worries and troubles and to accept themselves. Participants in the study were seven-year-old and eight-year-old learning disabled children. The lessons presented were outlined by Knaus (1974) but were adapted to the population by Knaus and McKeever (1974). In addition, each learning disabled classroom had its own individualized REE program. For example, one class emphasized positive self-concept, reduction of name calling and fighting, increased role taking, and increased reflective thinking. Another class focused on reducing test anxiety, developing skill in thinking fairly about oneself, and increasing tolerance for frustration. REE techniques were combined with various integration strategies in each of the learning disabled classrooms. These activities included visual memory

games to reinforce labels for feelings and increasing emotive vocabulary. An auditory memory game involved the child making a language master card about a time he or she felt a certain way: sad, happy, angry. Later, the child listened to a series of such cards and then retold each in sequence.

No data on population size or statistical analysis is provided. Instead, case descriptions of individual improvement were presented as an example of what can occur with a structured REE program.

The case-by-case improvements noted in the study by Knaus and McKeever (1977) indicate that overt behaviors and attitudes can be changed through the use of REE techniques. Of importance to the current study is the suggestion that an empirical study using the REE program is likely to find significant improvement towards positive self-concept, increased reflective thinking, thinking fairly about oneself, and increasing frustration tolerance. Each of these behavioral and attitudinal characteristics are considered to contribute heavily to impulsivity from a rational emotive viewpoint.

A study by Patton (1978) investigated the efficacy of Rational Behavior Training (RBT) developed by Maultsby, et al. (1974) with emotionally disturbed adolescents placed in a special education classroom. The author utilized a pretest and posttest control group design involving 34 students at an alternative public school. Seventeen were randomly

assigned to the experimental group, and 17, to the control group. The dependent variables were scores derived from three instruments. The subjects in this study all had comprehensive diagnostic evaluations with a primary diagnosis of emotionally disturbed. Age ranges were 15 to 20 years, with all having intelligence quotients that did not fall more than two standard deviations from the mean, and a mean reading ability of sixth grade, fifth month. Treatment consisted of three 40-minute sessions per week for ten weeks. The control group received no training and engaged in the regular activities of the school setting.

Dependent measures were the RBT Concepts Test by Maultsby (1974), Rotter's Internal-External Locus of Control Scale by Rotter (1966), the Personal Orientation Inventory by Shostrom (1976). The statistical analysis involved an analysis of covariance to compare differences in adjusted posttest group means, with the pretest scores serving as the covariate. The results were positive for the experimental group on learning the RBT concepts, improving performance on the External-Internal Locus of Control measure, and the time-competence scale of the Personal Orientation Inventory. Patton (1978) also found that the students were able to generalize the RBT concepts into personality structures. The one negative finding of the study is that the RBT training did not affect overt behavior in the educational environment. The current author feels that the potential for use of cognitive approaches with the emotionally disturbed

has been adequately demonstrated. However, the lack of change in overt behavior of students in the classroom suggests that either longer periods of training are needed with this age student, or simply, it needs to be implemented at an earlier age before the development of habitual behavior difficulties. Another possible difficulty is a lack of planned generalization activities from the therapeutic setting to the classroom.

In relation to the above mentioned potential difficulties, the current study implements rational thinking techniques in the upper elementary grades. Additionally, the actual training of students occurs in the classroom and is delivered by the special education teacher rather than by an outside resource person. The idea is to at least reduce difficulties encountered and to promote maximum change in attitudes and behaviors in the classroom setting.

Wasserman and Vogrin (1979) investigated the relationship between endorsement of the 11 irrational beliefs described by Ellis (1962) and overt behavior. Participants in the study included 27 emotionally disturbed youngsters ages 8 years, 5 months to 13 years, 9 months who, because of behavioral problems, were not able to attend their regular schools. All children were given thorough psycho-educational evaluations prior to enrollment in a community mental health day treatment program. Children attended the day treatment program the entire school year. During that time, they received three 40-minute small group sessions per week of

training in rational emotive concepts. The training manual utilized was developed by Knaus (1974). Teaching techniques included lecture, discussion, role playing, and homework assignments. Sessions were conducted by two certified school psychologists. The author utilized a no-contact control group posttest only design and administered two dependent measures. The two measures were the Idea Inventory by Kassino et al. (1977) and the Devereux Elementary School Behavior Rating Scale by Spivack and Swift (1967). Five other predictor variables were analyzed to determine their effect on the acquisition of or use of rational emotive principles. One predictor variable was months in treatment from the date of the child's enrollment. This was investigated to determine if length of exposure to rational emotive principles was a factor in the overall effect on overt behavior. Age was included as a variable to determine if chronological development has any effect on the acquisition or use of rational emotive principles. The other predictor variables were the full scale, performance scale, and verbal scale IQ's of the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974). Statistical analysis involved simple correlations between independent variables and each one of the 11 Devereux (Spivack and Swift, 1967) subscales. Next, the predictor variables were analyzed through a step-wise multiple regression equation. In this, each of the 11 Devereux subscales served as a dependent variable. Results indicate that age correlates more

significantly with the Devereux scales than any other variable. No other variable showed strong or consistent relationship or predictability with the Devereux scale. Age accounted for 21% of the explained variance on the External Blame subscale; on the Comprehension subscale, age accounted for 10% of the explained variance. On the Achievement Anxiety subscale, months in treatment accounted for 21% of the known variance. A significant multiple R was obtained when the Idea Inventory was combined with the External Blame scale. Likewise, significant multiple R's were achieved when verbal IQ was added to the Achievement Anxiety scale and Full Scale IQ was added to the Comprehension scale. In addition, the Idea Inventory was significantly correlated with the External Reliance and Creative Initiative subscales of the Devereux. Interpretation of these results lends some support to the use of Rational Emotive Therapy to change the behavior of emotionally disturbed children. Specifically, as endorsement of irrational beliefs decreased, the degree to which children relied upon external factors for guidance decreased. In addition, with the decrease in endorsement, children were judged as more creative and more likely to take the initiative in school situations. In addition, as emotionally disturbed children get older and endorse more rational emotive principles, they are less likely to blame external events for personal difficulties. Other results suggest that the older and more intelligent the child, the better able he or she is at comprehending events. Also, the

longer more verbally intelligent children stay in treatment, the more likely they were to experience achievement anxiety in test situations. This can be considered a positive effect when considering the long history of seeming unconcern about test performance by these children. Another finding is that there is no support for the idea that more intelligent children would be better able to utilize rational beliefs to affect overt behavior than less intelligent children. According to the author, one finding needs further empirical study: Months in treatment was not related to endorsement of irrational beliefs. This would suggest that continued practice of concepts in the Knaus (1974) manual, once learned does not lead to better behavioral adjustment.

Overall, a relationship was found between endorsement of irrational beliefs and self-reliance, external blame, and ability to take initiative in school situations. Endorsement of irrational beliefs alone did not significantly predict any overt behavior. Age in relationship to external blame did achieve predictability. This suggests that age as an indication of overall cognitive development may be a primary concern when deciding to use Rational Emotive Therapy.

A limitation of this study is the lack of a control group. This could have assured that the effects seen were not due to variables present in the treatment center classroom environment. The statistical analysis utilized is good, and the teaching of rational emotive principles is so directive that it is likely that the above-mentioned confounding

variable had little effect. One conclusion seems related to the present research. That is, the use of the Rational Emotive Education manual activities seems to have a positive effect on the emotionally disturbed child's feelings of control, self-reliance, and initiative in school situations.

A study by Staggs (1979) investigated the use of group counseling using Cognitive Behavior Modification (CBM) with learning disabled children in intermediate elementary grades (4, 5 and 6). The purpose of the study was to determine if group counseling on CBM techniques would cause positive measurable changes in reading comprehension, anxiety, personal adjustment, and social adaptability. Two different counseling methods were used. The first method involved self-talk training on paper and pencil tasks and then work with Rational Emotive Education (REE) techniques. The second method utilized REE by itself. Sixty-eight learning disabled students in randomly selected schools were assigned to groups on a random basis. Subjects received 45 minutes of instruction per week in one or the other method for 14 weeks. The self-talk training group received 10 to 20 minutes of training on using self-talk with paper and pencil tasks at the beginning of each session. Dependent measures given in a pretest and posttest design included the Spache Diagnostic Reading Scales by Spache (1963), the California Test of Personality (CTP) by Thorpe (1942), and the Children's Manifest Anxiety Scale by Castaneda, McCandless, and Palermo (1956). Statistical treatment of the test data

using analysis of covariance indicated unexplained interaction among the scores. Because of this, a chi-square analysis using only the posttest scores was performed.

The results indicate that the personal adjustment of learning disabled children can be modified through the use of self-talk training combined with Rational Emotive Education (REE). In fact, the group receiving this particular method of treatment scored consistently higher than the REE alone treatment group and the attention control group on both tests dealing with the affective area. The REE alone group seemed to experience a deterioration of affective test scores, and subjects were unable to assimilate the concepts of REE. The author felt that the failure of subjects to master REE combined with the experimenter's assurance that learning the technique would be of great help resulted in lowering of the self-concept and an increase in anxiety. The results of all three treatments on the improvement of reading comprehension and on the social adaptability scale of the CTP was not significant. However, the experimenter did find that subjects attending a non-year round school performed significantly better on the Spache Oral Reading subtest of the Spache Scales than students attending a year round school. Because the criteria of rejecting the null was not fully met, the author accepted the null hypothesis of no difference between the two groups.

It is possible that given additional time in treatment, more meaningful results would have been obtained. In-

sufficient treatment time is one limitation of this particular study.

In addition, subjects in the study all were in learning disabled classes part of the school day; therefore, the results cannot be generalized to learning disabled children who require full day special placement. Another problem is that the author suggests throughout that self-talk training mediated the learning of rational emotive concepts, but never explains how she feels this occurred. Study of a sample lesson suggests that the transfer from paper and pencil tasks to self-talk during affective problem solving occurred for subjects through discussions with the counselor on how to talk to themselves in a manner that would facilitate problem solving. It is also not clear concerning the experimenter's thoughts on why the REE alone group was unable to assimilate the REE concepts. The suspicion is that too much time was spent on lecture, and not enough time was spent on how to apply REE concepts in the REE alone group. One other problem with this study is that it is not clear how the experimenter determined that learning of REE concepts mediated by self-talk training caused the observed changes on the dependent measures. It is just as reasonable to assume that the success the student achieved in each self-talk training session accounted for the change, and that learning REE had nothing to do with it.

The aforementioned study attempted to train students in self-talk procedures including step-by-step problem solving,

verbal self-reinforcement, and overt to covert modeling. The author then apparently discussed with subjects how to apply this self-talk procedure to the learning of rational emotive education concepts. The current research will also employ self-talk procedures with the learning of rational emotive concepts. However, there are several differences in approach. First, the study will utilize students in self-contained learning disabilities rooms rather than students in part-time placements. Second, the self-talk training is integrated into the set of materials developed by this author and designed to teach rational emotive concepts.

A study by Meyer (1981) investigated the effects of rational emotive group counseling upon anxiety and self-esteem in learning disabled children ages 8 to 13. One hundred ten learning disabled children were assigned according to one of three experimental conditions: rational emotive therapy, a recreational-educational group, and a no-contact control group. Subjects received a total of nine 60-minute sessions over a ten-week period. The rational emotive sessions were based on a combination of approaches employed by Brody (1974) and Knaus (1974). The recreational group met the same amount of time and engaged in arts and crafts, hiking, table-top games, gym activities, sports, etc. The no-contact group design was used because children participating in the study were not randomly selected. pretests were required to ensure initial equivalence of

groups. Dependent measures included the Self-Esteem Inventory (Coopersmith, 1967) and the Test Anxiety Scale for Children (Sarason, 1960). Statistical analysis included univariate and multivariate analysis of covariance and discriminate analysis. Results indicated no significant difference in mean self-esteem estimates at the posttest. A significantly lower mean anxiety score did occur with the rational emotive group. Several limitations are noted in this study. The study involved only students participating in resource type learning disability labs which suggests that generalization to self-contained learning disabled classrooms may not be advisable. In addition, situational test anxiety may not be truly representative of a subject's tendency to experience generalized anxiety. Therefore, making a generalization that the technique of rational emotive therapy will lessen anxiety seems inappropriate. A question raised by this study is whether a longer treatment time would alter the self-esteem results.

The relationship of Meyers' (1981) study with this specific study is in the application of REE techniques to a learning disabled population. Specifically, both Staggs (1979) and Meyer (1981) utilized REE with students in part-time or less learning disability class settings. This study seeks to improve the research base on rational thinking techniques by applying the techniques to students in all day learning disability class settings. In addition, clarifying the equivocal results of the two aforementioned studies with

regard to anxiety and self-esteem is important. If anxiety and self-esteem are factors that interact with impulsive behavior, then positive results should be seen after treatment in all three areas.

Summary

DeVoge (1974), DiGiuseppe (1975), and Staggs (1979) agree on the value of teaching and reinforcing the use of rational self-statements. DiGiuseppe (1975) reported little success in teaching rational emotive principles to low intelligence, behavior-disordered, youngsters, while he noted rapid success with reinforcing rational self-statements. Staggs (1979) indicates that teaching rational emotive principles without self-talk training is unsuccessful with learning disabled students. Staggs also failed to find an effect on the social adaptability of the experimental groups involved in her study.

DeVoge (1974) noted changes in overt behavior; changes included increased self-control, calmness, higher frustration tolerance, and less upset over personal rejections and failures. Likewise, DiGiuseppe (1975) noted changes in observed response to name calling and classroom anxiety. Block (1978) used overt behavior change as a major evaluative criteria. He found significant changes towards higher grade point averages, fewer incidents of disruptive behavior, and less class cutting. Patton (1978) did not find an effect on overt behavior in the school setting. Staggs,

DeVoge, and DiGiuseppe were working with elementary school age students. Block and Patton were working with senior high school students. Interestingly, differences in the Block and Patton studies lie in both techniques applied and length of treatment. Block utilized Rational Emotive Education (REE) in five sessions per week for a full semester. Patton utilized Rational Behavior Therapy (RBT) in three 40-minute sessions per week for ten weeks.

Further empirical research seems needed on treatment length and the differential effects of REE and RBT on overt behaviors in senior high emotionally disturbed youngsters. Additional research is also needed on REE effects on overt behaviors in elementary age learning disabled and behaviorally disordered children.

Maultsby et al. (1974), Patton (1978), and Wasserman and Vogrin (1979) found that students in both elementary and secondary classes for the emotionally disturbed increased on measures of internal control after training in rational emotive principles. Maultsby et al. (1974) and Patton (1978) also reported positive changes in the Personal Orientation Inventory Time-Competence Scale. Both Maultsby et al. (1974) and Wasserman and Vogrin (1979) reported a decrease in number of irrational ideas endorsed after training. Techniques of Rational Behavior Therapy utilized by Maultsby et al. (1974) and Patton (1978) include Rational Self Analysis (RSA) which is a structured written procedure to aid in personal problem analysis and self-correction. This

is often used for written homework. A second technique is Rational Emotive Imagery (REI) which is mental rehearsal of rational behavior goals; that is, the rational solution to the problem identified through self-analysis. This technique was designed for adolescents and adults.

Techniques of Rational Emotive Education utilized by Block (1978), Knaus and McKeever (1977), Staggs (1979), Wasserman and Vogrin (1979), and Meyer (1981) include Rational Appraisal (RA) which involves teaching rational emotive principles through self-talk analysis and the challenging of irrational self-statements. The technique also includes activities and games directed at learning how to cope with mistakes, feelings of inferiority, anger, etc., and involves small group directed discussion as well as affective homework assignments. This technique was designed specifically for children in the age range of 8 to 13 years.

No additional studies were found concerning the effects of teaching rational emotive principles to emotionally handicapped or learning disabled children. Research specifically concerning a rational emotive conceptualization of impulsivity is not available (Watkins, 1977).

This suggests that further research using impulsive emotionally disturbed or learning disabled populations would be valuable. Specifically related to the current research is the concern with the effectiveness of self-talk training combined with the teaching of rational emotive principles and the effect noted by Wasserman and Vogrin (1979) of REE

on self-reliance and initiative in the school setting. Perhaps improvement in self-reliance and initiative from REE use would result in improvement in overall self-concept. In addition, as Staggs (1979) suggests, the use of Cognitive Behavior Modification (CBM) techniques as proposed by Meichenbaum and Goodman (1971) might reinforce the learning of appropriate rational self-talk and, if so, might make RET a stronger method for use with learning disabled or other handicapped populations.

Summary

The literature presented concerning cognitive style suggest that field dependent individuals experience more failure than field independent individuals. This occurs due to poor task definition and poor utilization of cues that might lead to successful performance (Keogh and Donlon, 1972). Blackman and Goldstein (1982) indicate that under-achievers are more field dependent and impulsive than normal groups. According to Nagel and Thwaite (1979) impulsive children apply poor strategic behavior to processing information. Epstein (1980) and Feldman (1980) suggest that impulsive children are more global, responding to the overall situation and structure of an event rather than to specific elements. Epstein et al. (1975) suggest that impulsive behaviors are found more often in learning disabled and emotionally disturbed populations. Epstein (1980) indicates that learning disabled youngsters are more

field dependent than normal groups.

Kagan et al. (1964) have indicated that global field dependent impulsive individuals will likely respond better to didactic instruction. This type of instruction states rules and principles explicitly. The majority of research studies have followed the conceptualization of impulsivity by Kagan, et al. (1964) and have sought to modify strategies of information processing while measuring changes with the MFFT (Kagan et al., 1966). Kagan et al. (1964) suggest that impulsivity is the result of cyclical trial and error approaches to problem solving. The impulsive individual responds without regard for accuracy and with minimal reflection, employs faulty hypothesis evaluation strategies and fails. The failure leads to anxiety and agitation and further impulsive responding which eventually leads to withdrawal from problem events. Kagan et al. (1964) propose several causes of impulsivity. They are concern for competency and reward seeking that leads to habitual quick response, cultural factors that lead to an unconcern for accurate performance, and constitutional predisposition.

Irrespective of the cause, impulsivity has been noted more frequently in handicapped youngsters, and that style tends to generalize across many cognitive tasks with the result being faulty performance (Epstein et al., 1975).

Research on modifying cognitive style as measured by the MFFT (Kagan et al., 1966) suggests that external forces can modify latency of response but do not change errors

(Epstein et al., 1975). The exception has occurred in studies utilizing CBM. CBM is a technique developed by Meichenbaum and Goodman (1971). CBM theorists suggest that impulsive youngsters are not subject to the inhibiting, controlling influence of language. Therefore, they respond in an associative, free-wheeling manner to events and problems while failing to utilize logic or reasoning.

Essentially, CBM changes the client's cognitions about an event by modeling step-by-step verbal self-instructions with coping statements. Coping statements verbally reinforce positive reactions to mistakes and serve to guide the individual through the task or situation. In this process, the experimenter teaches the subject to use self-guiding, self-reinforcing overt and covert verbalizations where such verbalizations were previously lacking. Research with emotionally disturbed samples has confirmed this approach as successful in modifying impulsive cognitive style and has supported its applicability in a broad range of task situations, both academic and social. Results are more equivocal with regard to CBM and learning disabled children.

Kupietz (1980) finds fault with most current research techniques for training children to be less impulsive. Major problems with the studies are lack of generalization to the classroom, confounding variables in the school environment, and poor description of materials and techniques.

Henker et al. (1980) suggest that the strategy emphasis of most studies might be incorrect because of remediating

descriptors of the problem rather than searching for, and working on, the root cause. According to Ellis (1973), Watkins (1977), and Ellis and Knaus (1979), the root cause of impulsivity is the underlying irrational beliefs of the individual. It has been suggested that some of these irrational beliefs may be related to theories of causation. Particularly, the individual's self-perception of control and the subsequent expectations are important to impulsive behavior. Research has shown that, on the locus of control dimension (Rotter, 1954), externally controlled individuals are found to have behaviors typical of impulsivity. Attribution theory (Weiner, 1979) suggests that individuals who fail more often are more likely to seek causal explanations for failure. According to Henker et al., if the individual also holds a belief that outcomes are uncontrollable, either internal or external and not easily changed, then failure brings on learned helplessness. If the individual generalizes failure experiences to other tasks, then global learned helplessness develops. That is, the individual has developed an expectancy of failure across many situations (Abramson et al., 1978).

The suggestion in a rational emotive conceptualization of impulsivity is that irrational absolutistic beliefs concerning success and failure are related to impulsivity. That is, absolutistic irrational beliefs concerning success and failure may find expression in the "must" and "should" self-talk utilized by the individual. Other absolutistic

mechanisms are overgeneralization and all-or-none thinking (Burns, 1980). In attribution terms the individual perceives the chance for change in his or her pattern of failure as hopeless and believes once failed, always a failure. Then every small defeat is confirming evidence that failure is inevitable. The individual gives up and simply loses any incentive for accurate performance. The success of CBM as mentioned previously may be due to coping statements which assist the individual in overcoming small defeats in problem solving and task performance.

Studies using rational emotive theory techniques to remediate impulsive behavior have not been performed (Watkins, 1977).

Other studies, though equivocal, suggest that self-talk training and the principle of challenging irrational beliefs enhance self-concept and reduce trait anxiety in normal youngsters. The most effective technique for teaching these principles in elementary age children seems to involve the Rational Emotive Education (REE) program developed by Knaus (1974), combined with a process of behavioral rehearsal. Further research indicates that neither reading level, intelligence, nor initial emotional adjustment appears to have an effect on content acquisition of the REE program.

The use of rational emotive techniques have been investigated in six empirical studies concerning handicapped youngsters. Two concerned learning disabled children while the other four studies involved emotionally disturbed

children and adolescents. Results of these studies are favorable and indicate that REE techniques successfully increase internal control, self-reliance, self-esteem, and lessen test anxiety. In addition, several descriptive studies reported that students were less upset and more able to deal with anxiety and frustrations following rational emotive training.

Suggestions for improvement in research discussed in the review of literature include using attention-control group designs and increasing time in treatment. Also, researchers should avoid situations in which they deliver the actual training to students or are responsible in total for the testing of subjects. This will provide for better control of experimenter bias. Other suggestions include using subjects who are members of identified problem populations rather than normal youngsters (Miller and Kassino, 1977), the idea being that clinical populations will show more dramatic improvements from exposure to rational emotive training techniques. Regarding the use of measuring instruments, it was suggested that researchers should not rely on teacher rating scales or subject self-report indices as the sole means of assessing program effects. This reduces the effect of teacher bias and the insensitivity to change found in research using self-report measures.

Additional ideas on improving Rational Emotive and Cognitive Behavior Modification treatment methods include the creation of materials that can be easily replicated

(Kupietz, 1980) and beginning training before adolescence when habits of behavior have become more ingrained (Patton, 1977). Kupietz (1980) has also suggested that the researcher plan generalization activities and teach in-group situations which are more realistic to school environments rather than to individuals. The suggestion from studies by Staggs (1979) and Meyer (1981) was that an increase in time in treatment is needed when working with learning disabled populations.

All of these suggested improvements have been incorporated in the current study and are discussed in detail in the next chapter.

CHAPTER III

DESIGN

Introduction

This chapter provides information regarding instruments, sampling method, materials, and procedure. The relationships of a number of variables to the cognitive style dimension of reflection-impulsivity is of interest to the current study. Also of interest is the effects of an instructional intervention on learning disabled (LD) and emotionally disturbed (ED) students. The instructional intervention is based on a rational emotive conceptualization of impulsivity. Research sources previously cited suggest that students with LD difficulties who are placed in self-contained classes have not been the subject of studies regarding impulsivity. This group has also not received attention in any rational emotive therapy (RET) or cognitive behavior modification (CBM) studies. Studies on RET with ED children have dealt with institutional populations or adolescents. A few studies have been involved with behavioral problems in populations not clearly defined as ED or LD. CBM studies with both ED and LD children have had the same population characteristics as RET studies.

The current study uses third-grade, fourth-grade, and

fifth-grade students who attend self-contained ED and LD classes. Only children identified as impulsive by their classroom teacher were included in the study. In addition, the special education teachers of identified students have been trained to deliver the instructional package.

Instrumentation

Dependent measures have been selected for their appropriateness to the experimental sample and for their utility in measuring variables thought to be related to impulsivity. Figure 1 is a summary of instruments and the variables they measure.

INSTRUMENTS	VARIABLES MEASURED
State-Trait Anxiety Inventory for Children A-Trait Scale	Trait Anxiety is the ongoing tendency to perceive many tasks and situations as stressful.
Woodcock-Johnson Psycho-Educational Battery-Reasoning cluster	<ul style="list-style-type: none"> a) Antonyms-Synonyms which is knowledge of word meanings. b) Analogies which involves completing verbal analogies. c) Analysis and Synthesis which involves generating novel equivalency statements. d) Concept Formation which involves categorial reasoning.

Figure 1. Instrumentation and Variables

INSTRUMENTS	VARIABLES MEASURED
Matching Familiar Figures Test	<p>a) Latency is the ability to inhibit immediate response and involves the average number of seconds to the individual's first response.</p> <p>b) Error Score is the average number of errors made and represents the individual's ability to delay response in favor of accuracy.</p>
Piers-Harris Self-Concept Scale	<p>a) Behavior represents the subject's self-report of how well he or she gets along with family and peers, at home and at school.</p> <p>b) Intellectual and school status is the subject's self-report of his or her intelligence and academic performance.</p> <p>c) Physical appearance and attributes are the individual's perception of physical desirability and strength.</p> <p>d) Anxiety is the individual's self-reported propensity to be nervous and worried.</p> <p>e) Popularity is the subject's perception of being included with others in activities and the ease of making friends.</p> <p>f) Happiness and satisfaction is the self-report of his or her satisfaction with the status quo in looks and behavior.</p>

Figure 1. (Continued)

Each instrument and the subsets of variables measured by the instrument are discussed in detail below.

State-Trait Anxiety Inventory for Children (STAIC)

Levitt (1967) examined the major assessment instruments utilized in the clinical testing of anxiety. The conclusion of his study is that the State-Trait Anxiety Inventory (STAI) is the most carefully developed for use with adults and adolescents. Utilizing the same structure and conceptual base as the STAI, Spielberger, Edwards, Lushane, Montouri and Platzek (1973), developed an instrument designed specifically to measure anxiety in 9 to 12 year-old children. This instrument is the State-Trait Anxiety Inventory for Children (STAIC).

The STAIC A-Trait scale is of particular interest to the current study. The A-Trait scale is a twenty question, self-report index that measures how subjects generally feel. It can be utilized to identify children who vary in anxiety proneness or as an experimental screening device for detecting neurotic behavioral tendencies in elementary school children. It may also be useful as a measure of effectiveness of clinical treatment procedures designed to reduce neurotic behaviors (Spielberger et al., 1973). The test-retest reliability over a six week interval is reported by Spielberger et al. for a group of fourth-grade, fifth-grade and sixth-grade children. Coefficients were moderate at .65 for males and .71 for females. The internal consistency is

reasonably good with an alpha reliability of .78 for males and .81 for females.

A validity study by Platzek (1970) suggests adequate concurrent validity for the A-Trait scale. Correlations were reported of .75 with the Children's Manifest Anxiety Scale (Castaneda et al., 1956) and of .63 with the General Anxiety Scale for Children (Sarason et al., 1956). A series of studies conducted at the Virginia Treatment Center for Children established the reliability and validity of the A-Trait scale for institutionalized emotionally disturbed children. Finch, Montgomery, and Deardorff (1974) found a test-retest reliability of .44 when testing after a three month period. The subjects were 23 boys and seven girls aged 9 to 13. Subjects obtained a mean A-Trait raw score of 41.90 with a standard deviation of 8.93 on the first test and a mean raw score of 42.77 with a standard deviation of 8.79 on the second test. The investigators also computed a Cronbach modified version of the Kuder-Richardson as a measure of internal consistency (alpha reliability) and reported a correlation of .88 for the A-Trait scale. Measures of internal consistency, given the transitory nature of anxiety, are considered by Spielberger et al. (1973) to be the best indication of reliability. It should be noted that the A-Trait reliability reported by Finch et al. (1974) is lower than the reliability reported by Spielberger et al.

Bedell and Roitzch (1976) explain this difference as one of methodology. The three-month time span between

pretests and posttests in the Finch study, plus the fact that the subjects obviously were in some form of psychotherapeutic intervention during the intervening time span, account for the low test-retest reliability. Bedell and Roitzch corrected this by administering the A-Trait Scale in a pretest and posttest format to emotionally disturbed children in a shortened time span and without intervening psychotherapy. They reported a test-retest reliability of .94 on the A-Trait scale.

Montgomery and Finch (1974) confirmed the predictive validity of the STAIC with emotionally disturbed children. They utilized a population of 60 emotionally disturbed children with an age range of 9 to 13 years and compared them with a matched group of 60 normal youngsters. They found that emotionally disturbed children do obtain significantly higher scores on both the A-State and A-Trait portion of the scale. Montgomery and Finch also obtained optimal cutoff scores on both portions of the STAIC for use in discriminating between emotionally disturbed and normal children. On the A-Trait scale, a cutoff score of 39 resulted in a correct differentiation of 63 per cent of the subjects.

Woodcock-Johnson Psycho-Educational Bat-
tery -- Reasoning Cluster (WJRC)

The Woodcock-Johnson Psycho-Educational Battery (WJ), developed by Woodcock and Johnson (1977), consists of an

achievement battery and a cognitive battery. It is an individually administered assessment that reports grade, age, and percentile score for each of its subtests and cluster scores for combinations of related subtests within the battery. The battery has been described as internally consistent in measuring both aptitude and achievement (Pfohl and Enright, 1981).

Reliabilities range from a low of .57 on spatial relations at age four to a high of .99 on visual-auditory learning from age 40 to 64 (Woodcock, 1978).

Pfohl and Enright (1981) note that reliability is adequate for this type of test. They also indicate that weaknesses are mostly in the 3 year old to 5 year old age range and at the adult level.

Rogers and Westbrook (1982) suggest that the WJ can be used to predict performance in scholastic areas on the basis of the cognitive abilities scores, although they note that additional validity studies are needed. Other uses involve confirming scores on other tests, such as group intelligence or achievement tests. Clusters are described as providing more reliable and valid scores than separate subtest scores; however, Woodcock and Johnson required minimum reliabilities of .80 for subtest and .90 for clusters before considering selection for the final battery. The reasoning cluster utilized in this study has a median reliability of .87. Reasoning cluster subtests have the following median reliabilities: Antonyms-Synonyms, .90; Analysis-Synthesis,

.84, Concept Formation, .90; and Analogies, .84. Woodcock (1978) reports eight concurrent validity studies involving different grades and ability levels. Correlations of the Cognitive Abilities Battery (12 subtests measuring verbal ability, reasoning, perceptual speed, and memory) with several standardized achievement and intelligence tests including the WISC-R provide good support for the validity of the WJ. The Cognitive Abilities Test of the WJ Battery correlated at .79 to .83 with the Wechsler full-scale. This suggests that the two share some commonality in the traits measured.

Woodcock (1978) reported grade three and grade five subtest reliabilities for the individual tests that make up the reasoning cluster. Grade five reliabilities are: Antonyms-Synonyms, .86; Analysis-Synthesis, .78; Concept Formation, .91; and Analogies, .84. Reliability for the Reasoning Cluster score is reported at grade five to be .87. Grade three reliabilities are: Antonyms-Synonyms, .87; Analysis-Synthesis, .83; Concept Formation, .92; and Analogies, .80. Reliability at grade three for the overall Reasoning Cluster is .87. This is particularly important to the current study which involves students typically in the age ranges found from third grade to fifth grade.

Reeve, Hall and Zakreski (1979) investigated the validity of the Woodcock-Johnson Test of Cognitive Ability (WJTCA) by comparing scores on the WISC-R and the WJTCA for a sample of learning disabled students. These examiners

found a correlation of .79 between the WISC-R full scale and the WJTCA full scale. They also found that learning disabled students scored one standard deviation below the normative mean on the WJTCA, while scoring very close to the normative mean of the WISC-R. The authors subsequently cautioned examiners on the use of the WJTCA for identification and selection of learning disabled students.

Ysseldyke, Shinn, and Epps (1981) have provided additional information on the validity of the WJTCA for use with learning disabled students. They report a correlation of .67 between the WJTCA full scale and the WISC-R full scale. More importantly for the current study, the authors report a correlation coefficient for the WJTCA cluster standard scores and the WISC-R full scale, verbal, and performance standard scores. The WJTCA reasoning cluster, which is being utilized in the current study, has a correlation of .50, .50 and .35, respectively, to the WISC-R scores. This is a rather low correlation; however, the WJTCA measures intellectual abilities that are very different from anything on the WISC-R.

For example, the Concept Formation subtest of the Reasoning cluster requires the student to identify rules for concepts when given instances of the concept, as well as non-instances of the concept. It is a reasoning test based upon the principles of formal logic. The Analysis-Synthesis subtest requires a subject to analyze the components of an equivalency statement and reintegrate them to determine the

components of a novel equivalency statement. The task is essentially one of learning a miniature system of mathematics and has features in common with chemistry and logic. The analogies subtest requires the subject to complete phrases with words that indicate appropriate analogies. The Antonyms-Synonyms subtest measures the subject's knowledge of word meanings. This subtest is used as a suppressor in the reasoning cluster by removing the contribution of vocabulary or verbal ability to performance on the Analogies subtest (Woodcock, 1978). In practical use, the reasoning cluster is sufficiently novel and difficult that it requires that the subject think clearly to achieve an adequate performance. That is, the subject must show considerable frustration tolerance, not be too upset over mistakes, and refrain from impulsive responding while showing careful reflective problem solving.

Matching Familiar Figures Test (MFFT)

The MFFT, developed by Kagan, Pearson and Welch (1966) has been widely used and accepted as a measure of impulsivity. Literally hundreds of studies have reported on its relationship with other cognitive measures, its relevance for use with children having learning problems, and its weaknesses.

Questions concerning the psychometric credibility of the MFFT and research methodological problems have plagued

the MFFT (Loper and Hallahan, 1979).

Ault, Mitchell, and Hartman (1976) suggest that latency scores of the MFFT have proven reliability. Internal consistency reliability is reported as .89, while Messer (1976) reports test-retest reliabilities that range from .58 to .96 after periods of 1 to 8 weeks. Ault et al. report an error score internal consistency reliability of .58. Messer indicates test-retest reliability for the MFFT error scores are reported to be .39, .34, .43, and .80. However, Messer notes that sampling irregularities, procedural irregularities and the use of the same version rather than equivalent versions of the MFFT suggest that these may not be true reliability scores.

Ault et al. (1976) and Egeland and Weinberg (1976) regard the reported reliabilities of the MFFT error score as low to moderate. Ault et al. cautions that low reliabilities result in errors of classification, regression to the mean when utilizing the MFFT in a repeated measures design, and problems with small sample studies in terms of loss of power. This loss of power occurs because the lack of reliability increases the error of measurement variation in the scores. In addition, increasing the error of measurement variation decreases the size of correlation coefficients. This makes it more difficult to detect true relationships. Egeland and Weinberg (1976) have suggested a solution to the reliability problem of the MFFT error score. They combine raw time and error scores into a standard score. Next, they

performed canonical correlations and test-retest correlations of the combined scores and achieved correlations ranging from .65 to .75. They conclude that researchers should use a linear composite of time and error scores rather than the usual nonlinear approach. Also, researchers should consider multiple regression rather than simple correlations when investigating the relationships of the MFFT to other variables.

Recently, Loper and Hallahan (1979) examined the use of the MFFT with learning disabled children. They found alpha reliability to be .56 for errors and .75 for latency. They suggest that the Matching Familiar Figures Test is predictive of several behaviors of relevance to the dimension of impulsivity when one utilizes continuous data and statistically controls IQ. They further indicate that the most accurately predicted variable with learning disabled students is achievement.

Loper and Hallahan (1979) conclude that problems with the MFFT have been methodological rather than problems with the construct itself.

Piers-Harris Self-Concept Scale (PHSCS)

Piers (1977) reports test-retest reliabilities on the Piers-Harris Self-Concept Scale as ranging from .62, with children in a resource classroom for academic deficiencies over a seven-month test-retest interim, to a .96 with mild

articulation disordered children and an immediate retest. An alpha reliability of .89 is reported with children 6 to 12 years old in an academic deficiency resource room. Validity studies reported suggest a correlation of .85 with the Coopersmith Self-Esteem Inventory and lower correlations ranging from .40 to .61 with a variety of other self-concept tests. Rich, Barcikowski, and Witmer (1979) suggest that construct validity studies support the Piers-Harris, particularly for factors bearing on physical appearance, behavior, popularity, academic ability, and anxiety.

Platten and Williams (1981) report evidence of factorial instability. Their study utilized 193 fourth-grade, fifth-grade, and sixth-grade Anglo, Mexican-American, and Black pupils. They report a test-retest correlation coefficient of .75 but with considerable factorial instability. They conclude that the Piers-Harris is more unidimensional than multidimensional. Essentially, the Piers-Harris appears to measure changes in attitude about physical and social attributes far more succinctly than any of the other construct variables. Various recommendations have been given, including rewriting questions that deal with emotionality (Rich, Barcikowski, and Witmer, 1979), and factor analyzing one's own data when using the Piers-Harris subscales (Platten and Williams, 1981).

Research with handicapped populations using the Piers-Harris Self-Concept Scale has shown significantly lower self-concepts in retarded students than normals and

also lower self-concepts in institutionalized retarded youngsters, as compared with those in public schools (Wynn, 1974, and Clarke, 1975). Studies with learning disabled youngsters from low socio-economic status had higher self-concepts than those from middle and high socio-economic status. The authors felt that such differences could be attributed to parental expectation. They felt that self-concept is more a function of the level of the group one compares with than a function of the absolute level of performance. Byrd (1975) found emotionally disturbed children aged 9 to 10 years had significantly higher self-concepts when placed in resource rooms, as compared to self-contained rooms or separate facilities.

Self-Control Rating Scale (SCRS)

The Self-Control Rating Scale (SCRS) was developed by Kendall and Wilcox (1979). The scale is a 33 item instrument in which teachers rate behavior on a seven-point continuum. One word descriptors anchor both ends of the continuum. The items were written based on clinical descriptions and research regarding impulsive and self-controlled behavior. In this regard children are considered to be non-impulsive if they can problem solve through careful deliberation, planning, and evaluation; execute the chosen response; or inhibit those responses that are to be disregarded. A high score on the SCRS means greater impulsivity. To assess

reliability and validity of the SCRS, Kendall and Wilcox (1979) randomly selected 110 normal third-grade through sixth-grade students. These students were tested with the SCRS, the MFFT developed by Kagan (1966), the Peabody Picture Vocabulary Test by Dunn (1965), and the Porteus Maze Test by Porteus (1955). The internal alpha reliability of the SCRS was .98 which suggests a high degree of internal consistency. Test-retest reliability was taken after four weeks with a sample of 24 students. In this sample reliability was .84. The SCRS was found to correlate significantly at the .05 level on MFFT latency (-.22) and at the .005 level on the MFFT error score (.25). Both of these were obtained with mental age (M.A.) and chronological age (C.A.) partialled out. This suggests very little shared variance in the SCRS and MFFT. Correlation on the Porteus Maze Q score was significant (.31) at the .005 level with both M.A. and C.A. partialled out. Correlation with independent rater behavioral observations were significant at the .05 level (.24). Correlations on all of these measures remained the same with either M.A. alone or C.A. alone partialled out.

Intercorrelations between the SCRS and the various other measures indicated a significant relationship on self-control measures but not on intelligence. The authors indicate that significant convergent and discriminant validation for the SCRS has been obtained. That is, the SCRS appears to adequately measure teachers' perceptions of

impulsivity and does so independently of intelligence.

The authors suggest that one of the reasons for developing the SCRS was the need for a dependent measure that could be used to assess the generalization of treatment to settings other than the therapy setting. Kendall and Wilcox (1979) feel that the SCRS is supported for such use.

Sampling Method

To select subjects for participation in the research, the Self-Control Rating Scale (Kendall and Wilcox, 1979) was completed by special education teachers on all third-grade through fifth-grade learning disabled and emotionally disturbed students. The median SCRS score obtained from that group of 214 students is 124. This median score is above the mean for all normal students included in the Kendall and Wilcox (1979) SCRS norming study. The mean score of the 214 special education students is 122 with a standard deviation of 46. This is compared to a mean of 99.3 and a standard deviation of 46 in the Kendall and Wilcox study. The mean of the forty students available to this study is 151 with a standard deviation of 36. Subjects meeting three criteria of a score of 124 or above on the SCRS, placement in a self-contained class and a full scale Wisc-R IQ of 78 or above made up the final experimental sample. An examination of data indicated that six intact classrooms contained enough impulsive children to be considered for this study.

Classes were randomly assigned to either a treatment group or an attention-control group. Sample sizes were small with 7 to 8 children in each class. T tests conducted between the three groups assigned to treatment indicated that they were essentially equivalent on the pretest measures. Likewise, t tests conducted between the three control groups indicated equivalence on the pretest measures. Because of this, treatment groups were collapsed together for statistical purposes. Control groups were also collapsed. The final sample size included an N of 21 for the experimental group and 19 for the control group. The experimental group consisted of eight emotionally disturbed and 13 learning disabled children. The control group consisted of six emotionally disturbed and 13 learning disabled children. Both experimental and control groups had six girls each in their respective groups. Both groups were administered all four of the instruments mentioned in the previous section.

Materials

Materials have been designed by this author to make students aware that rational or irrational thinking about an event precedes feelings and action and that irrational (muddy) thinking can cause a person to become upset and confused. Woven into the materials are various activities and stories illustrating confusing or 'muddy' thinking and a step-by-step method of changing muddy thinking to clear

thinking. Vocabulary activities are designed as an integral part of each activity and story. An instructional manual plus stories and worksheets are provided in a loose-leaf, three-ring binder. Additional materials provided by the author include color-coded, weighted 'feeling' blocks, weighing scales, salt, glass beakers, clay, and dittoes or worksheets.

Materials needed by the teacher include a blank cassette and cassette recorder and a Bell and Howell Language Master card reader. A description of each section of the manual, sample items, and instructions as well as sources and rationale for materials and procedures are provided in Appendix A.

Procedure

Before initiating the program, permission was sought and granted from the school district superintendent. In addition, letters were sent out to the parents of children involved in the experimental group. This letter explained that teachers would be utilizing a new instructional manual designed to help their child overcome impulsivity, fear of failure, and feelings of inferiority and to develop proper response to mistake-making. The letter further invited parents to view a display of the materials on a specific date and time. A detachable permission-to-participate slip was provided with an explanation that those who chose not to participate would simply be involved in other classroom

activities while instruction from the manual was taking place. (See Appendix B for copies of forms and letters.)

The special education teachers involved in the program met four times for one hour with the author to discuss the instructional manual and to be trained in the general steps that were to be followed. Teachers were then allowed to take the manuals home for further study. One additional one-hour session was conducted just prior to the start of the program. All teachers were instructed to begin on a specified week and to complete two one-hour sessions per week for a full nine-week period of time. The instructional schedule provided in this study involved 1080 minutes in treatment. This is double the amount of time in treatment provided by either the Staggs (1979) or Myer (1981) studies using cognitive behavior modification (CBM) with learning disabled children. It is more time than almost all studies cited in the review that use CBM with elementary age children. The one exception is the Douglas et al. (1976) study which involved 1440 minutes. The 1080 minutes is slightly less time in treatment than provided by Patton (1978) and Block (1978). Both of these authors utilized RET with adolescent populations. The treatment time in this research study is more than almost all studies cited that use RET with elementary age children. The one exception is the Knaus and Bokor (1975) study which involved 2550 minutes. A more extended treatment time could not be provided due to the wishes of the district superintendent. In order to deal with problems or questions during the

instructional period, teachers were encouraged to call as much as necessary. In addition, the author initiated alternating weekly consultations on procedure with each teacher. During each consultation visit the author asked questions concerning progress through the materials. Each teacher was cautioned to read the manual thoroughly and to follow exactly the sequenced plan of activities (See Appendix A).

Procedures for the control group simply involved assuring comparable teacher attention. Attention-control group subjects were involved in small group activities for a minimum of two one-hour sessions per week for a full nine-week period of time. To make sure that an attention-control group was maintained throughout the study, the author checked individualized plans on group participation and amount of time. In addition, the author spot checked the teacher's weekly lesson plans twice during the the study. No adjustments in time or group participation were necessary.

At the beginning and again at the end of the nine-week instructional procedure, certified psychometrists administered a battery of tests. Tests included the MFFT, the PHSC, the CTAS, and the WJCA. All pretesting and posttesting was completed in a time span of two weeks prior to the beginning of treatment and two weeks following the treatment. A range of 10 to 13 weeks separated the test sessions.

CHAPTER IV

ANALYSIS OF DATA

Introduction

This chapter reports the findings of the study relevant to the discussion of the four research hypotheses (pp.19,20). The purpose of the study was to examine the effects of an instructional technique based on a rational emotive conceptualization of impulsivity. More specifically the research was concerned with the effects of an instructional procedure on learning disabled and emotionally disturbed children in third-grade, fourth-grade, and fifth-grade self-contained classes. The experimental design involved random assignment of intact classroom groups ($N=6$) to either a treatment or attention-control condition. Subjects completed in a pretest and posttest format, two self-report indices and two performance tests. Thirteen highly correlated dependent variables were factor analyzed to reduce the number used in the final statistical analysis and to provide uncorrelated measures of the hypotheses under study. The results of the factor analysis are presented by reporting factor loadings and the proportion of variance accounted for by the identified factors. Subsequently, the final analysis of treatment effect is performed on three

uncorrelated variables which include self-concept, cognitive abilities (a combination of reasoning and impulsivity measures) and anxiety (a combination of two general anxiety measures). The statistical technique selected is a multivariate analysis of covariance with derived pretest scores used as a covariate. The purpose of using pretests as a covariate was to adjust for any initial difference between treatment and control groups. Categorical variables in this analysis involved 1) the type of student (i.e., whether learning disabled or emotionally disturbed) and 2) group, meaning membership in either treatment or control groups.

The obtained results of the statistical analyses are presented in the form of factor score cell means and standard deviations, main and interaction effects.

Results

Factor Analysis

The initial stages of data analysis included a review of a correlation matrix on the thirteen dependent variable measures (means and standard deviations may be found in Appendix C). The original statement of problem suggested that the variables under study: anxiety, impulsivity, analytical and integrative reasoning, and self-concept would be related. The correlation matrix shown in Table I indicates that the thirteen variables utilized in the current study are highly interrelated.

Table I

Correlation Matrix:

	PANTSYN	PANALYS	PCONCEPT	PANALOGY	PLATENCY	PERRORS	
PANTSYN	1.00000						
PANALYS	.35528	1.00000					
PCONCEPT	.57733	.56649	1.00000				
PANALOGY	.63062	.47306	.51533	1.00000			
PLATENCY	.30647	-.11186	-.05938	.20927	1.00000		
PERRORS	-.50307	-.26852	-.33846	-.45937	-.53954	1.00000	
PTRAITAN	.07226	.04512	-.08965	.00759	-.10883	.09485	
PBEHAVIR	-.28782	-.14143	-.01720	-.18033	-.23278	.18968	
PINTELLG	-.31076	-.05464	-.00184	.13706	-.17455	.06049	
PAPPEAR	-.28825	.02871	.08173	.15414	-.30815	.13518	
PANXIETY	-.25151	-.07911	-.02694	-.09299	-.08106	-.01627	
PPOPULAR	-.43836	.00256	-.01784	.02231	-.36932	.09694	
PHAPPY	-.33234	-.19927	.02938	-.01377	-.04351	.04419	
	PTRAITAN	PBEHAVIR	PINTELLG	PAPPEAR	PANXIETY	PPOPULAR	PHAPPY
PTRAITAN	1.00000						
PBEHAVIR	-.29849	1.00000					
PINTELLG	-.30631	.59797	1.00000				
PAPPEAR	-.19278	.30501	.68433	1.00000			
PANXIETY	-.61835	.33841	.39126	.22254	1.00000		
PPOPULAR	-.15490	.24210	.59542	.64359	.31065	1.00000	
PHAPPY	-.35282	.43660	.63493	.70335	.57166	.51764	1.00000

DETERMINNT OF CORRELATION MATRIX = .0005453

The correlation matrix in Table I suggests that the dependent variable measures are not independent and are not measuring thirteen different or separate characteristics. The purpose of multivariate techniques is to find variance in one dependent variable not attributable to each of the other dependent variables. In the case of highly correlated measures, the amount of independent variance will be very low. For this reason, the decision was made to try to reduce the thirteen variables to a smaller number of uncorrelated variables. This reduction to a smaller number of variables was achieved through the use of two principal component factor analyses. One analysis was performed on pretest scores and one on posttest scores; both utilized only factors with an eigenvalue greater than one. The author considered a value of .35 to be a salient loading on a factor. Both pretest and posttest scores were subjected to a varimax rotation procedure. The two sets of scores were essentially the same in terms of identified factors. However, the factor analyses on the posttest scores seemed more clear and stable; that is, there were fewer and smaller cross loadings on factors and smaller negative correlations. Because of this, posttest scores were used to identify factors. Factor loadings for the thirteen variables are reported in Table II.

TABLE II

Rotated Factor Matrix on Posttest Score

Variable	Factor I	Factor II	Factor III
Intellectual and School Status	.92185	-.12554	.17691
Physical Appearance and Attributes	.91367	-.10501	.02410
Behavior	.83742	-.23199	.25171
Happiness and Satisfaction	.82948	-.30470	.22975
Popularity	.67029	.21145	.51533
Errors	.02552	-.81926	.17622
Analogies	-.20810	.81838	.05886
Latency	-.03742	.80568	.08878
Concept Formation	-.17272	.78221	-.21566
Analysis-Synthesis	-.04811	.73691	-.16352
Antonyms-Synonyms	-.46855	.67974	.20941
Trait Anxiety	-.14694	.12863	-.86445
Anxiety	.27514	-.08122	.80355

Table II which presents the factor analyses of thirteen variables indicates the extraction of three uncorrelated factors. Together these factors account for 74.9 percent of the total variance of the measures. Factor I accounts for the largest single proportion of variance at 42.5 percent, while Factor II is responsible for 21.8 percent and Factor III, 10.5 percent of the total variance. The variables contained in Factor I are all self-concept measures and extracted from the PHSC by Piers and Harris (1977). The negative loading of the WJCTA Antonyms and Synonyms subtest on Factor I suggests that as self-concept improves, facility in handling antonyms and synonyms decreases, and vice versa. The anxiety subtest of the PHSC has been extracted and

paired with the Trait Anxiety Scale of the STAIC by Spielberger et al. (1973). These two measures form Factor III which can be appropriately labelled as anxiety. The negative correlation noted in Table II between the two anxiety scores is the result of a high score indicating anxiety on the trait scale and a low score indicating anxiety on the PHSC anxiety subtest. The loading of popularity from the PHSC on Factor III might suggest that social anxiety is also involved in the anxiety factor. Factor II contains the four subtests of the Woodcock-Johnson Reasoning Test by Woodcock and Johnson (1977). It also includes the latency and error score of the MFFT by Kagan et al. (1966). This factor has been labelled cognitive abilities. The negative correlation seen in Factor II between errors and the other five tests can best be interpreted as a rise in reasoning and latency concurrent with a decrease in errors and vice versa. The three factors identified and labelled are self-concept, cognitive abilities, and anxiety. These are close to the constructs identified at the onset of the study; therefore, data analysis will proceed with three variables instead of thirteen. Basically, the process of data analysis from here involved using factor score loadings from the posttest to derive pretest and posttest factor scores from the original thirteen variables.

The actual derived scores were obtained by using the sample mean and standard deviation of the pretest and

posttest and converting to Z scores through a series of compute statements. The Z scores are then converted to factor scores in standard score form. The results were used in the next step of analysis which was to proceed with the statistic using the derived scores. A multivariate analysis of covariance is the selected statistical technique.

Multivariate Analysis

Summarized in Tables III and IV are the results of the derived pretest and posttest factor scores of the 40 students who participated in the investigation. The data exhibited are the derived factor score cell means and standard deviations by group and type.

TABLE III

Pretest Factor Score Cell Means and Standard Deviations

Variable	M	Experimental		M	SD	M	SD	M	SD
		LD (N=13)	ED (N=8)					LD (N=13)	ED (N=6)
Cognitive									
Abilities	-.15332	.89455	.40151	.67650	-.41127	.81473	.68793	.29761	
Anxiety	.16348	.71214	-.04042	1.11236	.01397	.76094	-.33059	.99378	
Self-Concept	.13289	1.04814	-.19223	.78787	.13172	.78711	-.3103	1.07535	

Table IV

Posttest Factor Score Cell Means and Standard Deviations

Variable	M	Experimental		M	SD	M	SD	M	SD
		LD (N=13)	ED (N=8)					LD (N=13)	ED (N=6)
Cognitive-									
Abilities	-.16805	1.09520	.20268	.69837	-.31339	.98914	.77289	.88258	
Anxiety	.12693	.99946	.26965	.71530	-.20564	1.26331	-.18899	.73825	
Self-Concept	.07703	1.04857	-.65586	1.36120	.34111	.71705	-.03149	.57078	

A multivariate analysis of covariance was used to determine the significance of the differences between the means of the experimental and control groups on the posttests. Pretest scores served as covariates. Table V presents the F-ratio which reflects the differences between groups by type due to treatment on the three variables. Other data reported include degrees of freedom and significance of F.

TABLE V

Multivariate Analysis of Covariance Main and Interaction Effects

Source	DF	F	Significance of F
Group	3,31	.39130	.760
Treatment	3,31	1.02421	.395
Group X Treatment	3,31	.26296	.852

The results reflected in Table V indicate no significant group or treatment main effects and no significant group by treatment interaction effects on any of the three variables.

Summary

The technique of principal components factor analysis was utilized to reduce the original thirteen dependent variable measures to three uncorrelated measures. These three factors are identified as anxiety, cognitive abilities, and

self-concept. A multivariate analysis of covariance was then utilized to assess differences between group X type means. Results are not significant for main or interaction effects on any of the three factors.

CHAPTER V

DISCUSSION, SUMMARY, AND RECOMMENDATIONS

Introduction

The findings of this study do not support the four research hypotheses as stated in Chapter I (pp. 19, 20). The initial statement of problem indicated that if irrational absolutistic thinking, failure, self-concept, anxiety, impulsivity, and analytical reasoning are all related, then applying materials to change one of these traits would have a corresponding effect on all the others. The basis of the current study is a rational emotive conceptualization of impulsivity. This conceptualization views impulsivity as the result of innate low frustration tolerance plus internal thoughts and beliefs concerning failure, mistake-making, inferiority and perfectionism that are irrational and absolutistic in nature. From this basis, the author developed a set of instructional materials and four research hypotheses.

The research hypotheses follow:

- (1) If the training materials employed in this study are successful, then subjects who receive treatment will

experience a significant reduction in general anxiety when compared to a control group.

- (2) If the training materials employed in this study are successful, then subjects who receive treatment will experience a significant increase in their ability to inhibit responses and avoid errors in a visual scanning and selection task when compared to a control group.
- (3) If the training materials employed in this study are successful, then subjects who receive treatment will experience a significant increase in the tendency to evaluate oneself in a positive manner when compared to a control group.
- (4) If the training methods are successful, then subjects who receive treatment will experience a significant increase in their ability to apply analytical, relational, and integrative reasoning to problem solving tasks when compared to a control group.

The experimental design involved random assignment of intact classroom groups of LD and ED children to an attention-control or experimental group. In order to improve the research base on RET and CBM, the author incorporated several suggestions from the review of literature into the research design. These include increasing time in treatment, delivering instruction in a realistic school environment, using staff other than the researcher, and using some performance measures rather than relying solely on

self-report indices or teacher rating scales. Initially, thirteen dependent variable measures were selected to assess for treatment effects. These measures were subsequently found to be highly interrelated. A factor analysis reduced the original thirteen to three unrelated variables that closely approximate the four research hypotheses. These three principal factors are cognitive abilities (a combination of reasoning and impulsivity tests), anxiety (a combination of two general anxiety measures), and self-concept. The statistical analysis using the three factors was a multivariate analysis of covariance. No significant main or interaction effects were found as a result of treatment on any of the three factors measured.

Discussion

The following pages discuss results in terms of the three factors subjected to statistical analysis and their relation to the review of literature in Chapter II.

The first factor to be discussed is cognitive abilities. This factor involves a combination of the Woodcock-Johnson Reasoning tests by Woodcock and Johnson (1977) and the MFFT by Kagan et al. (1966). As mentioned, the six variables represented in these tests (i.e., concept formation, analogies, analysis and synthesis, antonyms and synonyms, errors, and latency) are highly interrelated. The

lack of significant treatment effects suggests that cognitive abilities as represented by these measures are not affected by the combination of CBM and Rational Emotive Education (REE) treatment method used in this study. This finding runs somewhat counter to the results reported by Douglas et al.(1976). Specifically, they found improvement in cognitive tasks unrelated to treatment method when employing the self-verbalization and self-reinforcement activities proposed by Miechenbaum (1972) to teach hyperactive youngsters less impulsive problem solving strategies. The problem solving strategy involved considering the consequences of events and actions in social situations. Specific to the current study, Douglas et al. (1976) found improvement in MFFT errors and latency and cognitive tasks such as mazes, oral comprehension, listening comprehension, memory and story completion (event and consequence analysis). They did not find improvement in oral reading, spelling, arithmetic, or overt behavior as rated by teachers. In the current study, the treatment also involved self-talk training and self-reinforcement through the use of coping statements. Content of the materials also emphasized teaching step-by-step social event problem solving. None of the treatment techniques or materials were similiar to the Woodcock-Johnson assessments or to the MFFT. The results, however, were not significant.

It appears that teaching experimental subjects over a nine-week period of time to use a step-by-step problem

solving approach, while at the same time teaching them to be aware of irrational absolutistic thinking about mistakes, frustration, perfectionism, and feelings of inferiority when solving a problem, does not affect the cognitive abilities measured in this study. The fact that Douglas et al. (1976) found improvement in several cognitive abilities including impulsivity when using CBM alone supports CBM use as a stronger technique than the combination of CBM and Rational Emotive techniques used in this study. However, the cognitive abilities improved upon by Douglas et al. (1976) except for impulsivity are far different than those investigated herein. The suggestion is that CBM works on some cognitive abilities but not on others. Interesting research might be developed by using CBM alone and assessing its effects on an experimental group's scores on the reasoning and impulsivity combination factor of the current study. Conversely, using the combination approach of this study and assessing its effects by using the cognitive abilities emphasized by Douglas et al. (1976) might prove useful. Several other possible investigations could be valuable. First, the subjects in this study on initial measures were not considered to have problems with reasoning ability. That is, when comparing test scores of both experimental and control groups to test manual norms, neither group was below average. The one exception was the antonyms and synonyms subtest in which both groups fell in the below-average range. A study utilizing subjects who

score below average in all of the reasoning subtests might provide a more substantial measure of the effect or lack of effect of the combination technique employed in this paper. A second interesting question involves the impulsivity scores. Initial and posttest measures suggest that, based on test norms, all experimental and control groups were impulsive at the pretest and 10 to 13 weeks later not impulsive at the posttest. The same examiner, format, etc. was utilized in each assessment. The reduction in errors and increase in latency noted and the effect on reasoning was not enough to reach significance; therefore, one would assume that several of the youngsters remained relatively impulsive. That is, subjects continued to perform in a fast inaccurate pattern and any changes were due to change fluctuations in test scores. One possible explanation for the lack of significant results on the MFFT and reasoning factor may be the small N. That is, the N was not large enough in each cell to produce significant results. Ault et al. (1976) have noted a loss of power when using the MFFT with small sample studies. Research involving a larger sample is likely needed. In practical terms, however, large groups are difficult to obtain due to limiting factors of the school environment. Although subjects seemed to remain relatively impulsive, they were capable of performing reasoning tasks that require a careful thoughtful approach. Perhaps, the attention of subjects was piqued by the novel nature of the Woodcock-Johnson tests, and this resulted in a

slower more accurate approach. That is, however, conjecture and would need to be investigated through additional research.

This does suggest another area that should be looked at in terms of the Woodcock-Johnson and the MFFT. That is, the similarity and dissimilarity of the specific tasks involved in the tests. Kagan (1966) relies heavily on the field dependence concept for the basis of his MFFT test. He indicates that impulsive subjects fail to look at alternatives in visually related tasks and focus on one dimension of the problem. Contrary to this, subjects in the current study had to consider alternatives when performing on both the Woodcock-Johnson concept formation and analysis and synthesis subtest. An average range of performance would not be possible without flexibly focusing on all of the various elements of the problem. Both the MFFT and the above mentioned Woodcock-Johnson subtests are visual analytic tasks. The differences, however, are in the auditory component of directions and the sample problem solving approach given in the Woodcock-Johnson. For example, the directions of the Woodcock-Johnson guide the individual through sequential if-then statements while requiring analysis of shape and color attributes (analysis and synthesis). This creates a task that is visual-analytic but with a sequential auditory cue. In addition, the Woodcock-Johnson contains auditory tasks that involve word presentation as the only visual cue. All of these subtests

and the MFFT, according to factor analysis, measure the same thing. The difference is in task specific auditory and visual cues.

In any event, the contradiction posed herein suggests that impulsivity may be a fluctuating behavior, sometimes under the individual's control and sometimes not, depending on the specific task characteristics. If this is so, it is contrary to Feldman's (1980) study on cognitive flexibility. That study found impulsive youngsters, when approaching a task, employ global rather than task specific analysis and show little flexibility in changing approach to match task demands.

Overall, it would seem that at a minimum, additional factor analytic studies are needed which utilize the cognitive abilities factor of the current study. Studies that look at impulsivity in terms of specific task characteristics and demands as related to cognitive flexibility also seem needed. The implication is that the particular combination of RET and CBM techniques used in this study over a period of nine weeks is not powerful enough to significantly change feelings of general anxiety in the experimental group subjects. The results seem to support the Ribowitz (1979) study which found no significant effects when using Rational Emotive Education techniques to alter trait anxiety. A significant fact with regard to the trait anxiety results in the current study is that none of the groups as a whole considered themselves to be highly anxious

at pretest or posttest. This lack of anxiety may or may not be a positive result of the special education placement. A study that would assess general anxiety in regular classes just prior to a student's special placement and then reassess some time after special placement would be interesting. Using the methodology of the current study but with subjects (special education or regular) who are assessed at high levels of general anxiety would also be valuable. In any event, one interesting question might involve whether special education teachers who make their classroom environments totally accepting and comfortable for the impulsive youngster, thus alleviating feelings of anxiety, are doing that youngster a favor. This is a question that has also been asked by Henker et al. (1980). It may be that without feelings of anxiety, there is no motivation to invest in change. The lack of significant levels of anxiety in the subjects of this study and the aforementioned possible impulsivity may lend credibility to one of the causal factors of impulsivity proposed by Kagan, et al. (1964): that is, impulsive youngsters, for whatever reason, do not value accurate performance and are, therefore, not anxious when they fail. Without at least slight anxiety there is no incentive toward accurate reflective thinking, and the youngster's propensity for acting impulsively goes unchecked. What might occur is that special education teachers receive youngsters whom they know have experienced repeated failure in regular classrooms.

They consequently work hard to limit failure and reduce anxiety-provoking situations. At the same time, they accept impulsive behavior as stable (not subject to change), either consciously or tacitly, through a lack of effective action. The result may be that impulsive special education students become sheltered and do not learn the importance of modifying their impulsive behavior. In addition, because they are accepted anyway, their reasons for learning to cope properly with failure and mistakes are gone and so is any anxiety experienced over the same. The special education teacher, whether through conscious or tacit approval, has become part of the problem, and the impulsive behavior becomes self-perpetrating. Of course, this clearly is assumption and research would be necessary to clarify the effect presented above. Perhaps research using attribution theory as a base would prove helpful in clarifying the above notion. A study using the methodology of Försterling and Garfinkel (1981) with special education populations would also be interesting.

A possible research idea may involve using subjects who have just entered special education classes and who have assessed levels of high anxiety.

Another possible area of research relating to attributions would involve personal helplessness as described by Abramson et al. (1978). If cyclic failure leads eventually to giving up and helplessness, it might also lead to a lack of affect and anxiety. Kagan (1964) says that the

impulsive individual employs a trial and error approach that leads to failure and anxiety. This anxiety then triggers more impulsive behavior. These two positions, one involving no anxiety and one involving high anxiety, sound somewhat contradictory. However, it may be possible that they represent stages in the development of impulsive behavior. At the outset the youngster is anxious over impulsive behavior and the failures that result. As failure builds upon failure, they move to feelings of helplessness and become perhaps resigned to failing, thus reducing or eliminating anxiety.

Another factor possibly affecting the trait anxiety results is the instructional content of treatment. The instructional materials teach students to be more aware of their irrational thinking and the consequences such thinking might have in terms of impulsive behavior (Volume I of the materials). It is possible that developing this awareness might result in higher anxiety. In Volume II of the materials, subjects are taught that mistakes are not serious in most instances, and a person should react calmly to them and view mistakes as chances for the individual to learn. The result of this section could be the lowering of anxiety. The question is: Is it possible that the two areas of emphasis cancelled each other out? Additional research seems needed.

There may be several other reasons for the lack of significant results. One is the problem of self-report

indices. This involves the tendency of the subject to seek examiner's approval by answering in a manner thought to be consistent with the examiner's wishes. The STAIC is a self-report measure that could be affected by this behavior. The possible development of a response set due to the STAIC design is also a problem.

The third and final factor of concern is self-concept. This factor involved five subtests of the PHSC (Piers and Harris, 1977). This includes the individual's self-evaluation of behavior, intellectual and school status, physical appearance and attributes, popularity, and happiness and satisfaction. The lack of significant treatment effects suggests that challenging irrational absolutistic thinking concerning failure, mistake-making, perfectionism and feelings of inferiority, had no significant measureable impact on self-concept. The combination approach utilized in this study is less effective, over a nine-week period of time, than CBM alone or Rational Emotive techniques are with ED youngsters.

One problem interpreting these results at least over a nine-week period of time, is the oppositional behavior witnessed by the examiner with two ED respondents. Both of these youngsters at posttest responded to the PSHC in a purposely negative manner. Another factor possibly affecting the results is that none of the groups had what would be considered an overall negative self-concept either at pretest or posttest. This is interesting considering these

youngsters are considered to be moderately handicapped and the LD and ED students with the greatest impairments of youngsters in their category within the school district.

The relatively high self-concept found in subjects of this study might be the result of the special education approach of building on success at the student's level and positive regard provided by the teacher. It also might be due to a lack of awareness of how serious their problems with impulsivity really are and how they affect others. One research approach might be to assess students coming into a special education class and deliver the treatment to only those with lowered self-concepts. The findings reported herein on self-concept seem relevant to the review of literature in terms of expanding the base of knowledge on when rational emotive techniques are likely to be effective. Knaus (1974) says it should be used as a preventive mental health program. Subsequent studies with normal populations have been conducted by Knaus and Bokor (1975) and Harris (1976). Both studies reported positive effects using rational emotive education techniques with normal children. Several studies on learning disabled children seem to suggest that it is not successful, at least with that particular problem population. The studies on LD students were conducted by Staggs (1979) and Meyers (1981). The study by Staggs suggests that REE by itself is not successful in improving self-concept, a fact supported in a study conducted by Meyers. Staggs did find that combining REE with

pretraining on CBM self-talk procedures did produce significant improvement in self-concept. The current study suggests that combining the two approaches rather than pretraining might be worthwhile. The results, however, did not seem to reflect that a stronger instructional procedure resulted. It should be noted that both the Staggs (1979) study and the Meyers (1981) study used LD children in resource labs. The current study found no success using the combination approach with LD students in self-contained special education classes. The use of REE with other than normal students has not been supported. Further studies on pretraining students on CBM self-talk procedures followed by REE training should be developed.

There are several additional concerns that may have affected the results of the current study. First, failure was proposed as a key element in a rational emotive conceptualization of impulsivity. For the purposes of this study, failure was defined in an historical manner; that is, it was assumed that all the subjects of the study had a common historical experience with failure in regular classes prior to entering special education. Without such documented experiences, students would not have been placed. The author may have misjudged the effect of a year or more in special education towards ameliorating the adverse effects of failure. It seems particularly important that future studies develop methods for obtaining sample populations of impulsive children who are still reacting to their failures.

Perhaps a study on the failure attributions of impulsive students entering special education would be helpful. In addition, comments from special education teachers responsible for delivering the instructional method seem to indicate that students were beginning to generalize the concepts both at home and school when the treatment period ended. One of the teachers checked her students three weeks after the treatment had ended, and students were having difficulty recalling the lessons. However, teachers were very complimentary of the materials. The suggestion is that more time in treatment might have changed the outcome. In addition, studies that utilize pretest/posttest and follow-up measures might be valuable.

Summary

This study was designed to determine if a combination of Rational Emotive Therapy and Cognitive Behavior Modification techniques would significantly and positively affect impulsivity, general anxiety, self-concept and analytical reasoning. The theoretical basis for the study involved a rational emotive conceptualization of impulsivity. This conceptualization suggests that impulsivity arises from irrational absolutistic thinking concerning failure, mistake-making, perfectionism and feelings of inferiority. The mechanisms of impairment are all-or-none dichotomous

categorization of all experiences; overgeneralization in that once a negative event occurs, it will be repeated endlessly; and "I must" and "I should" self-talk. The author approached this conceptualization by developing a set of instructional materials designed to teach awareness of irrational thinking in everyday social interactions. Concurrently, the instructional technique involved teaching groups of subjects how to solve problems in a step-by-step manner while simultaneously self-rewarding themselves through positive coping self-statements. These self-statements are designed to replace the negative self-statements subjects might have been using in similar problem situations. The instructional approach counts on subjects to identify with the characters in the stories and materials. Once identification takes place, subjects through discussion, example, and practice activities are expected to develop positive coping mechanisms similar to those developed by story characters. The four research hypotheses suggested that a significant reduction in general anxiety and impulsivity would occur concurrent with a significant increase in analytical reasoning and in positive self-concept. A review of a correlation matrix obtained in the beginning of multivariate analysis on the thirteen variables resulted in a decision to do factor analysis. Subsequently, the thirteen variables were reduced to three uncorrelated measures closely approximating the original four research hypotheses. The three factors were named

self-concept, anxiety, and cognitive abilities. The selected data analysis technique was multivariate analysis of covariance. Results were not significant for group or treatment main effects or for group by treatment interaction effects for any of the three variables.

Possible reasons for the lack of significant main or interaction effects could be problems with self-report indices; that is, subjects may have responded according to perceived examiner preference and response set. Also, students did not test as highly anxious, low in reasoning abilities, or particularly low in self-concept at pretest or posttest. Another difficulty in the current study may be a small N and an insufficient treatment length. In addition, a possible lack of power in the treatment technique because of contradictions between volumes of the materials may be a problem. Other possible limitations in this study involve the very specific nature of the subjects in this study. Results can be generalized only to third-grade through fifth-grade learning disabled and emotionally disturbed subjects attending self-contained classes.

Recommendations

Recommendations for future research include investigating the effects of treatment with a larger N and with impulsive learning disabled and emotionally disturbed groups who have just entered special education classes from the regular class setting. This also could be a way of

developing a study using impulsive subjects truly low in analytical reasoning abilities and self-concept and high anxiety. Checking the student's attitude about failure, his or her historical experience with failure and current reactions to failure experiences before including him or her in the experimental population might prove helpful. The author also recommends the development of a content acquisition measure to go with the materials. In addition, this content instrument and other measuring instruments should be used to assess effects at different points in the instructional materials. This would give a better idea of just what various units are accomplishing in terms of teaching the intended content. If appropriate instruments measuring irrational beliefs could be found or developed, then additional information might be available on the validity of the materials. A study using measures of irrational beliefs held before and after treatment might provide information on whether subjects became more aware of irrational thinking as a result of the materials. Another possibility would be to use teacher ratings of impulsivity, anxiety, and self-concept, rather than subject self-report ratings with the hope that they would prove more sensitive to change. Studies utilizing at least a semester of training seem to be needed, and it would be wise to administer follow-up measures to assess if treatment effects generalize. Factor analytic studies using the Woodcock-Johnson Reasoning Tests and the MFFT are needed.

The author would like to stress that the results of this study should not be considered conclusive proof of the lack of viability of the Rational Emotive conceptualization of impulsivity or the treatment method. Improvements in research design might well produce a different end result.

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APPENDIX A

MATERIALS, RATIONALE, METHODS, SAMPLES

AND PROCEDURES

Rationale

Cognitive therapy is based on the assumption that there is a negative relationship between illogical irrational thinking and thinking positively about oneself. Maultsby (1970) has written that thinking is a learned behavior. He further states that both inaccurate and accurate habits of thinking may be learned. Cognitive therapists in general suggest that inaccurate habits of thinking result from illogical belief systems about one's environment, self, and others. Maultsby (1970) believes that it is the failure to correct irrational thinking that renders psychotherapy ineffective. He further suggests that habits of inaccurate thinking can so skew a person's responses that emotional and behavioral problems can develop.

Knaus (1973) believes that a faulty view of mistakes and frustration underlies the common human problem of procrastination. The actual underlying belief is that one is worthless if he or she makes a mistake (feelings of inferiority), and that frustration is a negative and bad

experience and should be avoided. The procrastinator, according to Knaus, will manifest these beliefs through perfectionism, fear of failure, anxiety, catastrophizing, anger and impatience, grandiosity, exaggerated love needs, and feelings of being overwhelmed. Knaus further states that three major mechanisms are used by the procrastinator to resist change. These mechanisms are rationalization, impulsivity, and escapism. Rationalization is characterized by the "I'll start on it tomorrow" attitude which temporarily makes the person feel less anxious; however, when he does not do the task the next day, he hates himself, while realizing he never intended to do it. Others have the attitude that the "cavalry will come to the rescue". They believe that they will do their best work at the eleventh hour, that the job will magically disappear, or that somebody will help out. This rationalization also involves the idea that it is better to play today and work tomorrow.

Impulsivity stems from low frustration tolerance. Having decided that the task is either too tough or not worth the effort, the individual just gives up for varying periods of time. This "giving up" is suddenly then replaced by frenetic activity. The cycle continues until the individual tires of delaying gratification any longer and begins to try to find rapid, quick fix, impulsive short cuts to obtain what he wants.

Escapism is a belief in magical solutions; somehow if one only waits, then good things will happen. This belief camouflages the individual's intolerance for work and is

compounded by the individual's having most of the good experiences in his life in fantasy rather than in reality. Escapist activities, such as daydreaming or prolonged fantasies, lose their value to a person when utilized to the extreme. Other methods of escapism are watching television, dusting, or shopping the day before a big test or some other event.

The Clear Thinking Method (CTM) materials are based on the premise that habits of inaccurate, irrational thinking are both a practical and emotional problem for mildly handicapped youngsters and that adaptation in our society requires the retraining of irrational thinking habits.

Devoe (1974) points out that children often learn irrational habits of thinking from significant others. For example, the child who behaves imperfectly and is told by his parent that he should be beaten to "within an inch of his life ", will have learned the attitude that "If I make a mistake, I'm not worthy to live", and that it is terrible to not perform well. Berger (1974) supports this notion when he suggests that problems occur in individuals when they expect too much of themselves, are perfectionistic, or when an individual makes a negative reaction evaluation of oneself based on what the individual perceives as a negative reaction to them by another person.

More recently, Burns (1980) described perfectionists as those who strive for standards so high as to be beyond reach or reason. Perfectionists are people who strive compulsively towards impossible goals and who measure their own worth in

terms of productivity and accomplishment. Burns calls this attitude the "perfectionist's script for self-defeat".

Burns relates that evidence is mounting that the perfectionist pays for his belief through impaired health, reduced productivity, poor self-control, troubled personal relationships, and low self-esteem. The underlying irrational belief involved in perfectionism is that "I must be perfect to be accepted by others". Burns describes the mechanisms of perfectionistic impairment as "all or none" thinking, overgeneralization that a negative event will always be repeated, and the "should/ought" belief system. Burns believes that perfectionism may in part be learned at home from a child's interaction with perfectionistic parents. The child is rewarded with love and approval for outstanding performance; when the parents react to the child's mistakes and failures with anxiety and disappointment, the child likely interprets it as punishment or rejection. The perfectionistic parent often feels frustrated and threatened when a child has difficulty in schoolwork or in relationships with peers. This occurs either because the parent is unrealistically self-critical or he or she personalizes the child's difficulties by thinking that it shows what a "bad parent" he or she is because the parent's self-esteem is contingent on the child's performance.

CTM materials are based on a second premise that there is a period of time in the early childhood of mildly handicapped youngsters when their parents follow a perfectionistic script. That is, the parents suppress and deny

mounting evidence that the child is handicapped and continue to expect productivity that is equivalent to an intact peer group. They reward productivity that approaches that of the peer group and react to mistakes and failure with increasing levels of anxiety and disappointment. The act of making mistakes is taken out of the realm of normal human behavior and instead becomes an abhorrent confirmation to the parent that something is wrong. The child then interprets these reactions as punishment and rejection. Therein lies the development of inaccurate irrational beliefs about mistake-making and inferiority.

Furthermore, the development of irrational beliefs about mistake-making and inferiority is reinforced in many school environments. Teachers tend to fall into a perfectionistic script. Many teachers view mistake-making as evidence that something is wrong with the child (the child is not perfect) because to believe otherwise would be admitting poor teaching (the teacher is not perfect). This type of pattern occurs frequently with mildly handicapped youngsters who physically look and, at least partly, act like other children. These children are the learning disabled, mildly to moderately emotionally disturbed, and the mildly retarded who are usually not viewed as handicapped by parents or others until they enter school and begin having difficulty. These mildly handicapped youngsters quickly learn in the regular classrooms that their mistakes make them different. This feeling of being different is reinforced when they become involved in the referral process,

are tested and subsequently placed. The importance of performance reinforced by significant others becomes the criteria used by the child to rate his or her own self-worth. This leads to the third premise on which CTM is based.

Greiger (1975) believes that the most damaging negative self-evaluations occur when one accepts the negative judgments of others and rates himself or herself totally as a person based on performance. This in fact, given the prerequisites of the situation mentioned above, is what happens. Learning disabled and emotionally disturbed students are discovered in schools once their mistake-making begins to be recognized as deviant. As they misperceive task demands and their own skills, they set themselves up to fail, and they do so more often than other children. This continuous experience with failure, and the societal push for evaluating the self against performance standards creates in the child feelings of worthlessness. Faced with continuous failure and feelings of worthlessness, the child often develops a fear of failure and begins to drop out of activities that carry any hint of failure. This pattern of failure is easily translated by the child into absolutistic thinking, which simply means "I failed this time, I will always fail". The child convinces himself or herself that he or she is incapable of handling most situations or of achieving. A type of learned helplessness develops, and the student loses his or her motivation to strive for much of

anything. Integrated very closely with the child's perceptions of mistake-making and failure is how the child perceives the frustration that results from striving and failing. Trexler (1976) suggests that many people associate only negative thoughts and emotions with frustration. He suggests that people may perceive frustration positively, depending on their cognitive interpretation of the event. Trexler feels that the key is to teach people that frustration is a situational temporary block of a goal-directed activity. It is a fact -- not a feeling. Frustration is to be viewed as a part of life bound to be experienced by all humans. Trexler further suggests that when people are viewing frustration as a negative feeling, they reveal it in their self-statements, statements such as "I can't stand it" or "the world is unfair".

This then is the fourth premise of the CTM materials. Trexler's conceptualization of frustration as a fact is particularly relevant for handicapped students. Again due to their misconceptions of task demands, they will inevitably experience many blocks of goal-directed activity. Unfortunately, many handicapped children develop relatively quickly an habitual pattern of not being able to cope with frustration. Because mildly handicapped children lack a successful mechanism for coping with frustration, they tend to respond according to the negative connotations they place on it. Thus, exaggerated responses of withdrawal, aggression, and impulsivity may occur as the result of low frustration tolerance.

The fifth premise of CTM is described by Rossi and Nieger, et al. (1977) who feel that the therapist needs to not only help children change thoughts, but also teach them how to think. Rossi feels that children in therapy have an aberration in generalizing and abstracting about interpersonal consequences. He suggests that the therapist teach in concrete terms rather than through abstractions. The goal of therapy is to help children understand the process of accurate thinking and the effects of irrational beliefs upon emotions and behavior.

Neiger, et al. have suggested that teaching people gentle assertiveness in social and personal problem-solving situations may have value in teaching one to cope with mistake-making and frustration. Teaching gentle assertiveness involves challenging the illogical belief that one must have the approval of others by simply teaching the person how to analyze a situation, thinking about alternatives, and responding to the situation in as gentle a way as possible. Both authors recognize that some individuals may have problems with analyzing interpersonal situations and responding in a manner that will not bring about further problems. The fifth premise of CTM is that mildly handicapped children need to be taught how to analyze events and respond with appropriate actions that will not cause further problems.

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THE CLEAR THINKING METHOD

Introduction

The impulsive child does not stop and think when faced with an event or problem; that is, an impulsive child will think quickly, settling on the first answer or reaction that comes to mind. Generally, one who is impulsive fails to weigh the facts against his or her thinking and fails to weigh all the alternatives for response or solution of a problem against the personal consequences. The impulsive child simply reacts with the outward expression of his or her thinking, which is the expression of feelings. Due to faulty thinking, the feelings expressed are often of such a nature that they compound the difficulty in which the child finds himself or herself.

The first challenge to changing this is to make the impulsive child aware of when he or she might be responding impulsively. In the Clear Thinking Method, this is done by teaching awareness of words that are cues to a student that thinking might be "muddy". "Muddy thinking" is acting without thinking, which results in feelings of anger, confusion or upset. This type of thinking also puts the student into a worse predicament than before. The Clear Thinking Method teaches students to recognize that feelings that are too intense in nature are caused by "muddy" thinking.

The next step is to help the child establish a pattern of thinking that will help him or her to think in a slower, more reflective manner about an event or problem. This is done by teaching the "Stop and Think and Weigh the Facts" method through every story and activity. Directions are designed with the idea of slowing the child down and asking the child to think. Even the manner in which stories are read is designed on this "slow down and think" concept. The use of the teacher as a verbal model, and as a model of thinking through facial expressions and gesture, is an important part of the technique.

The last step in the method is to keep the child from becoming discouraged over the product of his or her thinking. This is done by teaching an awareness of common blocks to "clear" thinking; for example, frustrations, attitude about one's self, mistake making, procrastination, and perfectionism.

CLEAR THINKING METHOD

Lesson I-IV

Introduction

Dear Teacher:

The purpose of lessons one through four is to point out to children in a concrete manner that events are not always what they seem and that what we think about an event at first glance is often not correct. Basically, the idea is to begin to create in the child an attitude of caution and skepticism when confronted with life events. As this idea is taught, an important sequence of verbal self-commands provides the child with a basis for analyzing events. The verbal self-commands include: stop and think, analyze or weigh the known facts, compare the facts against your thinking about the event, identify the "muddy thinking" that has clouded your view of the event (by recognizing the word cues "must", "should" and "absolutely shouldn't" that indicate when muddy thinking is taking place) and clear up your muddy and confused thinking by changing your way of thinking to conform with the real facts. Children are taught that to change thinking about an event, they change what they are telling themselves about the event--their "self-talk" or "inner talk" about what happened.

Lesson I involves teaching the idea that there are two types of thinking -- clear, and muddy. The activities in Lesson II illustrate how muddy thinking occurs and

emphasizes that a person can look closer at the facts of an event in order to think clearly. Lesson III simply presents a concept review of the first two lessons. Lesson IV is designed to begin teaching to the student an awareness of word cues that indicate that muddy thinking is taking place. The words "must" and "should" in the context of demanding of oneself or others is the key conceptual element of this lesson.

CLEAR THINKING METHOD

Teacher Directions

Lesson I--A and B

1. Take the vocabulary phrase cards out of the pocket. Demonstrate how to use the Language Master by giving step-by-step verbal directions and modeling (see explanation on next page).
2. Have the group of students play the vocabulary phrase cards and study the definitions and story pictures on the card.
3. While students are completing their study, go to lesson I and read the objective, materials needed, and steps to follow. Prepare materials. Quickly review the large print narration that you will say during the activity and the small print directions. Also, review the sequence involved with use of the muddy, unclear thinking pictograph.
4. Proceed through Activity I A with your group of students.
5. Conclude Lessons I with Part B. Begin by using the muddy, unclear thinking pictograph just explained in IA as an example. Give each student a blank pictograph, and review the example. (See large print on Part B explanation Page).
6. Now proceed with Step 2 as explained in Part B.

Teacher Guide For
Word and Phrase Card Activities

Materials needed: Bell & Howell Language Master and word and phrase cards for each story.

Step 1: Word and phrase card activities are to be completed in the session prior to the reading of a story.

Step 2: The teacher is to model the method of using the language master by using self-statements on successful operation and completion of the activity.

Example:

"OKAY, WHAT IS IT I'M SUPPOSED TO DO? FIRST, I'LL PLACE THE CARD IN THE MACHINE; THEN, I PUSH THE GREEN BUTTON DOWN. THERE - THAT'S GOOD. I'VE GOT IT SO FAR. OKAY, HMMM..... THE CARD ISN'T GOING THROUGH. LET'S SEE NOW - I'LL JUST MOVE THE CARD UP A LITTLE BIT - THERE - I'VE GOT IT. NOW, LISTENOOPS. I DIDN'T CATCH ALL OF THAT, BUT IT'S OKAY. I'LL TRY AGAIN. GOT IT. NOW, ONE MORE TIME, AND I'LL WHISPER ALONG WITH THE CARD. THAT'S IT. NOW I'LL CLOSE MY EYES AND REALLY THINK ABOUT WHAT WAS SAID FOR A FEW SECONDS. THERE - I THINK I KNOW WHAT IT MEANS. GOOD, NOW I NEED TO READ THE WORDS ON THE CARD AND THINK ABOUT THEM. NEXT, I'LL STUDY THE PICTURES ON THE CARD SO THAT I CAN REMEMBER THEM LATER. THERE - THAT'S GOOD. I CAN GO TO THE NEXT PAGE.

STEP 3: When doing this modeling activity, the teacher should be sure to add appropriate facial expression and

gesture. This process should be modeled before each set of word and phrase cards.

Clear Thinking Method

Lesson I

Part A Goals: To Teach the idea that there are two types of thinking. Clear and muddy and how muddy thinking about an event determines how we feel about the event.

Part A

Materials: Two glass beakers of equal size. Food coloring to simulate muddy water. Tap water.

SOMETIMES YOUR THINKING IS MUDDY LIKE THIS WATER. WHEN THE WATER IS MUDDY YOU CANNOT SEE THINGS AS THEY ARE SUPPOSE TO BE. WHEN THE WATER IS CLEAR YOU CAN SEE THINGS MORE AS THEY ARE.

Have each student hold his finger behind the beaker and look through. While they are doing this say several times

WHEN THE WATER IS MUDDY YOU CANNOT SEE YOUR FINGER. WHEN IT IS CLEAR YOU CAN SEE YOUR FINGER.

Next say

WHEN YOUR THINKING IS MUDDY LIKE THIS WATER (point to) THEN YOU DO NOT SEE OR FEEL ABOUT EVENTS AS THEY ARE.

Ask the students

DO ANY OF YOU KNOW WHAT MAKES THE WATER MUDDY OR UNCLEAR?

(Accept concrete answers ie., you put something in it, you mixed something into it.)

YES I PUT SOMETHING INTO IT. WHEN I MIXED IT ALL AROUND

IT BECAME MUDDY AND UNCLEAR.

Next

THIS MIXING UP CAN HAPPEN TO YOUR THINKING AND MAKE THE WAY YOU SEE AN EVENT AND FEEL ABOUT IT MUDDY AND UNCLEAR.

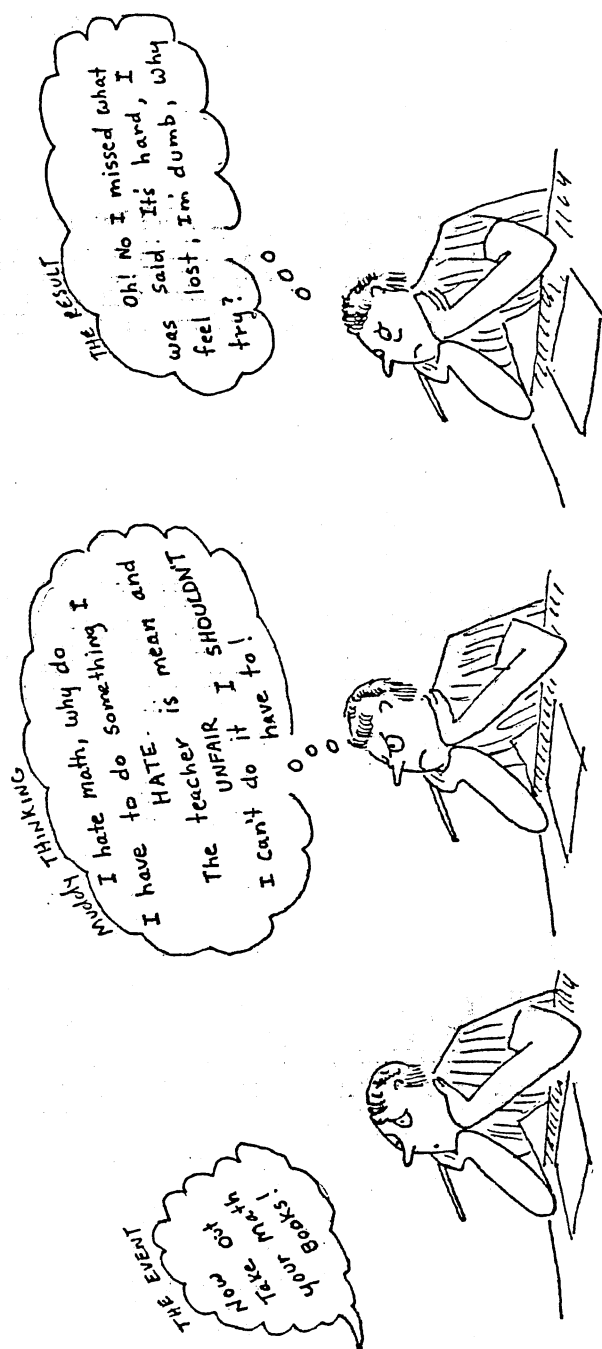
(Show pictograph of mixed up muddy and unclear thinking. Guide students through the EVENT and MUDDY THINKING by pointing to and reading the word balloons from left to right then.....)

SEE PICTOGRAPH ON NEXT PAGE

.....Say

SOMETIMES THIS MIXED UP MUDDY AND UNCLEAR THINKING CAN LEAVE
YOU FEELING CONFUSED.....LIKE THIS

Read the RESULT part of the pictograph and point to it's
location on the page)



CHANGING MUDDY THINKING

TO CLEAR THINKING

Introduction

Dear Teacher:

This section of the Clear Thinking Method involves continued teaching of awareness of word cues which suggest that muddy thinking is taking place. It also gives the child a model of the use of verbal commands in everyday life situations. In addition the teacher begins to model slow reflective thinking by drawing attention to the proper story sequence (through pointing), facial expression etc. On the first two stories (Jennifer and the Must Monster and Patty Gets the Must Biz) the teacher is free to develop what feels natural in facial expression and gesture. The only requirement is that the teacher model thinking about what is being read aloud to the student and that this is done in a non-verbal manner. The teacher will need to read slowly with enthusiasm, proper voice inflections and a slight over-emphasis on the word "Must" wherever it appears in the stories.

Beginning with "Mike in the Doghouse" the teacher will add on techniques to those employed in the first two stories. "Mike in the Doghouse" structures the story sequence further by adding numbers (you still focus attention to the sequence by pointing). Secondly, the teacher will structure the use of facial expressions and

other nonverbal gestures to reflect slow study of each page in accordance with the story cues presented for class study at the beginning of the story. The last add on in "Mike in the Doghouse" is the underlining and visual emphasis given to the word cue "Must." Also the teacher is to use this underlined and enlarged word cue as a quick reference point as teacher and students go back through the story to discuss and become aware of all the muddy thinking that led up to main character's problem.

The add on technique for the fourth and last story in this section involves the teaching of more structured covert speech over several choral readings of the story. The teacher will need to study the narrative very carefully and practice several choral readings of the story. Be sure and use combinations of all the techniques of emphasis utilized in the previous three stories. The last add on is the "Discussion" section at the end of the story. This section assists children with the precise identification of all the muddy thinking that led to the main character's problem. Also, it goes one step further and after a brief group discussion the teacher points out the changes in the main characters self-talk by comparing the muddy thinking statements with the clear thinking statements contained on the last page of the story.

At the end of all the stories the teacher will review with the students the following items of commonality in all four stories. The teacher simply presents this information

in a summary lecture.

Muddy thinking is cued by the word "MUST" which causes you to expect or demand that something happen just exactly like you want. It is sometimes cued in the same manner by using the word "SHOULD" or demanding that one absolutely SHOULDN'T HAVE TO DO SOMETHING.

Muddy Thinking In These Stories

Included:

1. Demanding that one must have something and thinking it is awful and getting very unhappy if one does not get it.
2. Thinking that one is not loved if others treat them in anyway personally perceived as unfair.
3. Demanding that one MUST have everything his/her own way.
4. Demanding that everything happen perfectly and getting very upset when it doesn't.
5. Believing that there are things that one SHOULDN'T HAVE TO DO or that can be put off because it's personally distasteful even if it is what is really best.

Clear Thinking:

- 1& If I just stop
2. and think it would be nice but I can live without it. No one ever gets what they want all the time. Besides who says I will always have to be treated fairly or I will be forever unhappy.
- 3& It would be nice
4. if I could have everything the way I wanted but the world won't end if it does not happen.
- '5. What law, says I should only get to do what I want on my schedule.

The material below is presented next by the teacher discussing it and flipping through the stories. This is to show students where in each story that a

particular point of information may be found.

In each and every story the muddy thinking is associated with the child being very upset and emotional and ending up in a greater problem than he or she anticipated. The fact is that when one is thinking muddy he/she often will express that thinking by overt behavior and excessive feelings. This generally causes negative reactions in others and causes unplanned predicaments. (Find the pages where extreme emotion is illustrated and where the end result is more than the main story character bargained for.)

In every story the child is gently guided through the clear thinking steps which involve verbal commands of: stop and think, analyze or weigh the facts, identify muddy thinking, and change the muddy thinking by changing what you tell yourself about the event (your "self" or "inner talk"). Find the pages where the main story character is using the clear thinking steps and then changes his or her thinking.

"Jennifer and the Must Monster"

Introduction and Teacher Directions

This story helps students become more aware of "MUST" word cues that lead to "muddy thinking" and speaks to changing one's thinking by changing what one tells himself about an event or problem.

The teacher will simply read the story aloud to the students.

Jennifer and the Must Monster



by Gary W. Gerber
illustrations by Andy Brown
and Gary W. Gerber

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"Patty Gets the Must Biz"

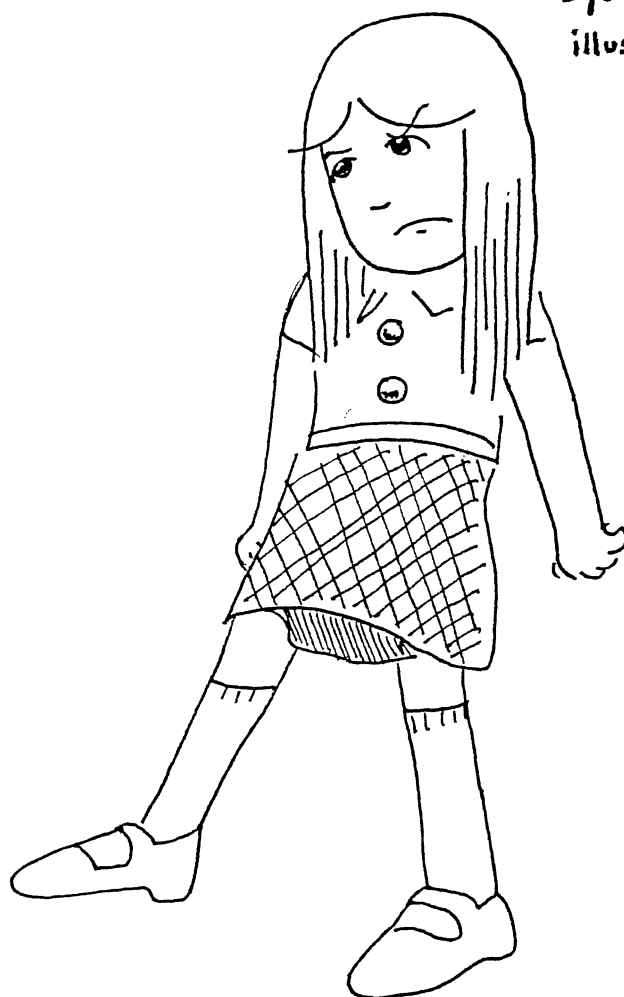
Introduction and Teacher Direction

This story gives a second illustration of "MUST" word cues that lead to "muddy thinking". The story also introduces ideas about listening and concentrating. In addition, it begins to introduce "step-by-step" thinking: checking the facts about an event or problem and then changing one's thinking.

The teacher will simply read the story, with one exception: Beginning on page eleven, the teacher should have a student or aide read what Patty says, and the teacher will read what Katy-did is saying.

PATTY GETS THE MUST-BIZ

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illustrations by:
Andy Brown and
Gary W. Gerber



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THE KATYDID'S PLEASURE BOAT

by: GARY W.
GERBER



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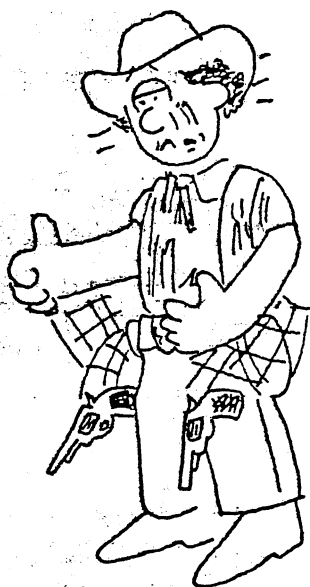
CHAT-CHAT



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illustrations by: Andy Brown
and Gary W. Gerber

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NOT SO FAST PETE



by: Gary W. Gerber

illustrations by: Andy Brown
and Gary W. Gerber

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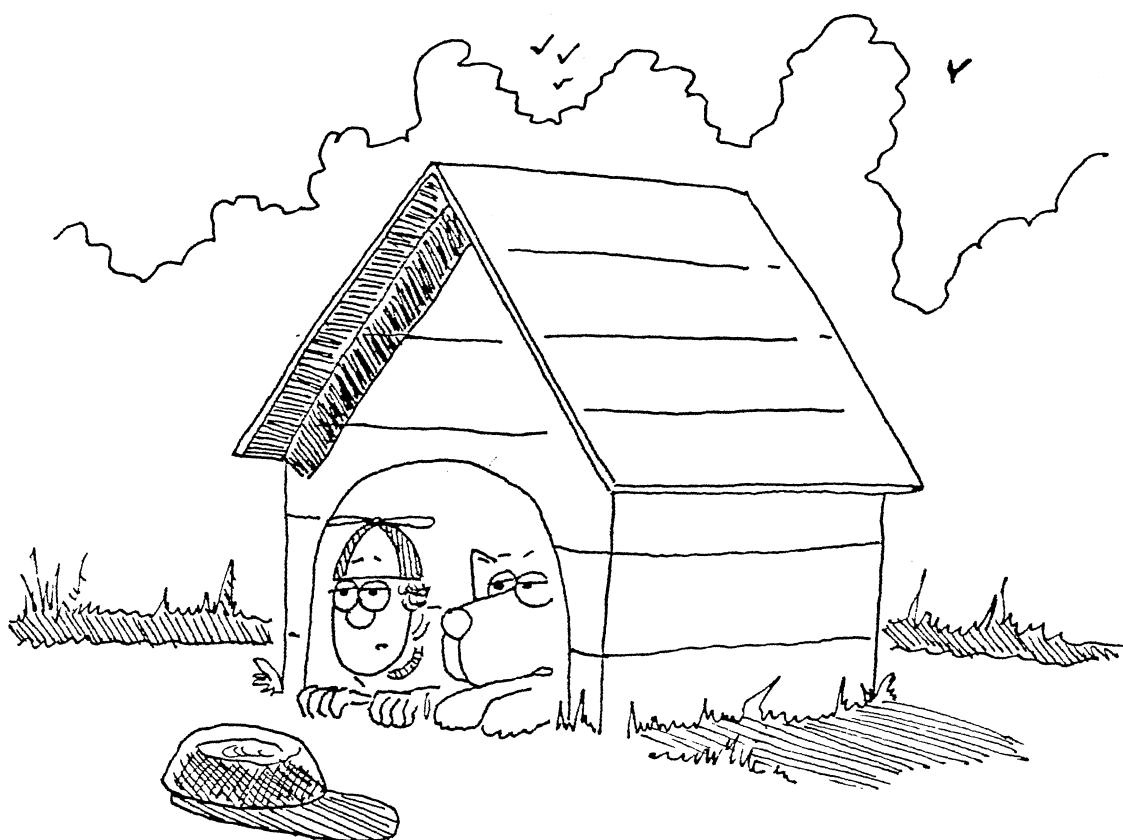
SKINNY BEAR



by Gary W.
Gerber

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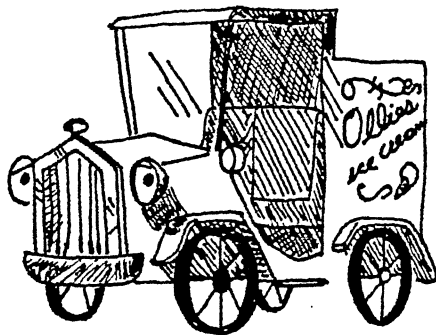
MIKE IN THE DOGHOUSE



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and Gary W. Gerber

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Ollie and the ELUSIVE SHOULD



by Gary W. Gerber
illustrations by Andy Brown
and Gary W. Gerber

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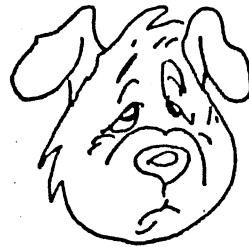
SPELLING TESTS ARE VERY HARD BECAUSE YOU FORGET THE WORDS. YOU HAVE A TEST FRIDAY AND YOUR TEACHER HAS ASKED YOU TO STUDY MORE AT HOME.

WHICH OF THESE IS YOU:



Tragic thought

Oh! No this is awful
I feel terrible! I've
failed before I'll
always fail! Woe is me!
But I'll worry about
that tomorrow there
still will be time.



Depressed

Another test - well
here we go again. I
must be the dumbest
person around. I'm
so depressed. I'm
such a worthless
person. I'm just
going to sleep in
today.



Anger

Gosh! Another dumb
test. I shouldn't
have to take the test.
It's unfair. I hate
all tests. I've al-
ways hated tests.
The teacher is a
mean and rotten person
for making me take it.
I'll show her I just
won't study.

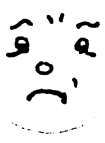


Concerned

Hmm! I really don't
do to well on tests.
But, if I stop and
think about it may-
be I'll come up with
a way to study better.
Anyway I'll do the
best I can and as long
as I do that I don't
have to feel bad or
dumb.

CLEAR THINKING ABOUT MISTAKES (Worksheet)

Muddy Thinking causes:



1. Mistake

2.) Clear Thinking

a.) What are the facts about why I made the mistake. (What went wrong)

b.) What is it I'm trying to learn?

c.) What do I have to learn to make it right?

d.) Where do I find what I have to learn:

3.) Try Again; Tell yourself that "Now I've got it!"
" I'll try again!" " That's good I've done my
best so I won't beel bad!"



WHAT WENT **WRONG ??**

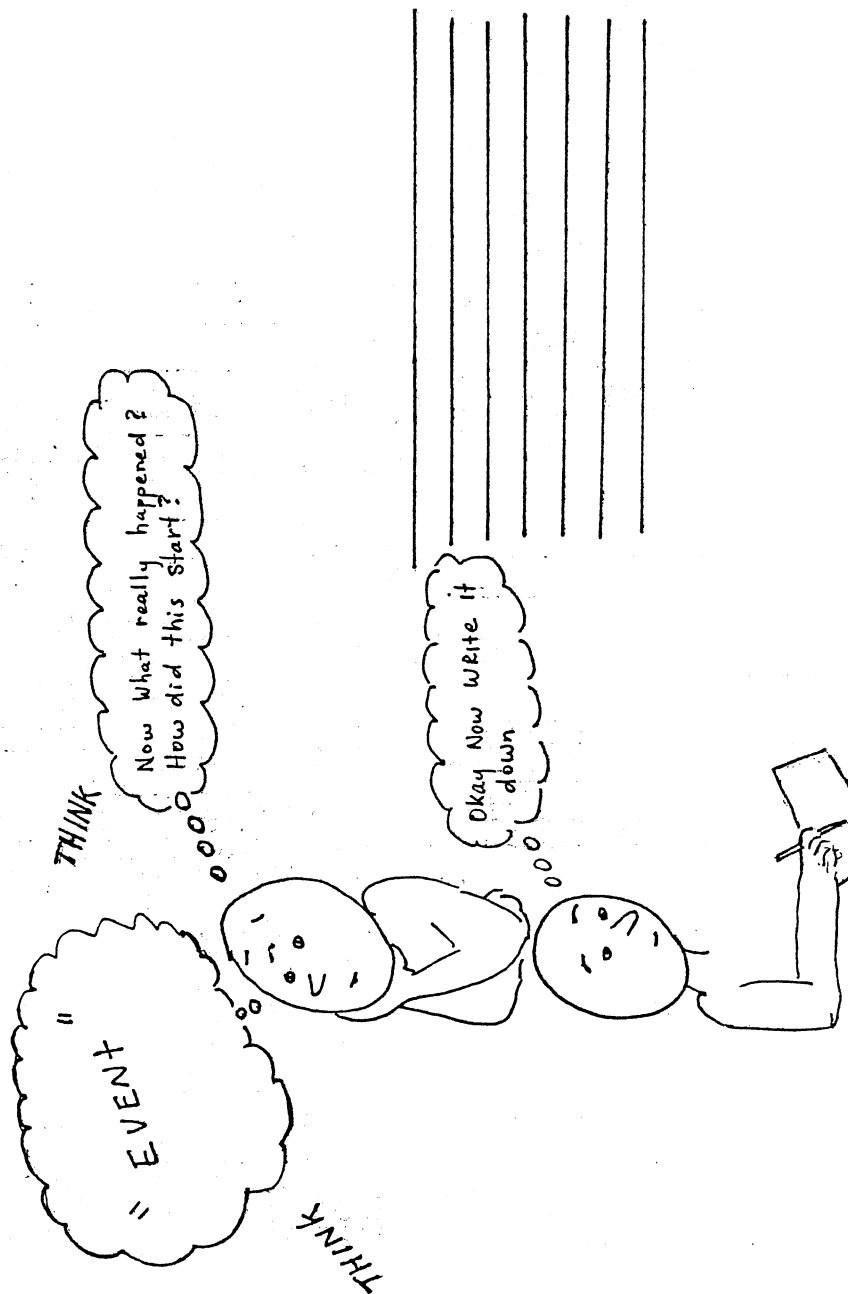
(Clear Thinking Worksheet - time out to think!!)

Students Name

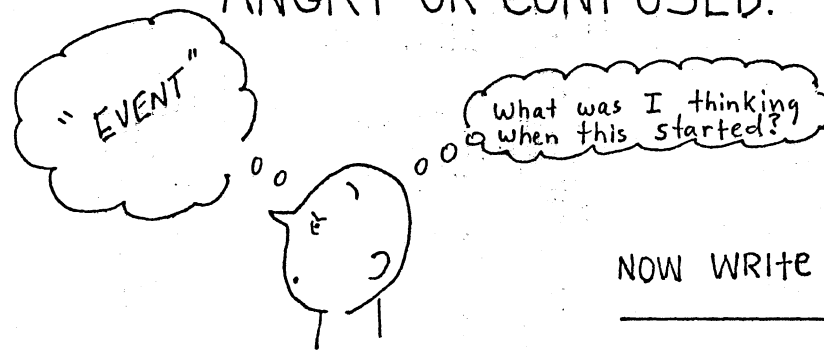
Date

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Step 1. THINK ABOUT WHAT HAPPENED AND WRITE THE FACTS

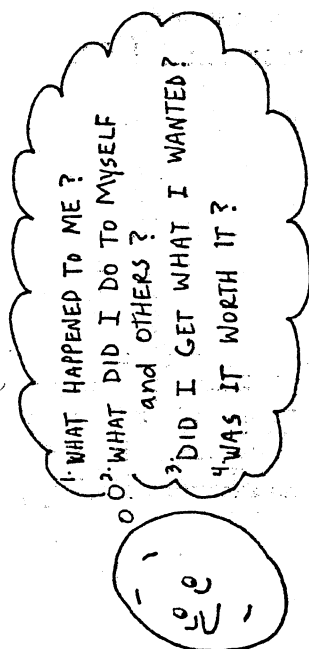


Step 2. BY YOUR THOUGHTS YOU CHOOSE
HOW YOU FEEL. THOUGHTS ARE
MUDDY IF YOU BECOME UPSET,
ANGRY OR CONFUSED.



NOW WRITE IT DOWN:

Step 3. THINK ABOUT THE RESULTS OF
BECOMING UPSET, ANGRY OR
CONFUSED.



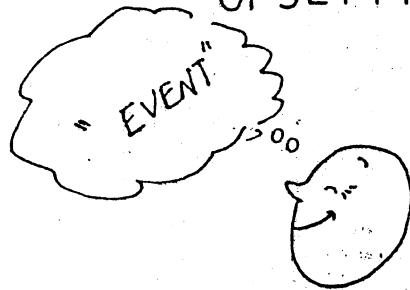
1. _____
2. _____
3. _____
4. _____

Step 4. THINKING ABOUT THE FACTS AGAIN.

WHAT WOULD CHANGE MUDDY

THOUGHTS TO CLEAR LESS

UPSETTING THOUGHTS ?



NEW THOUGHT _____

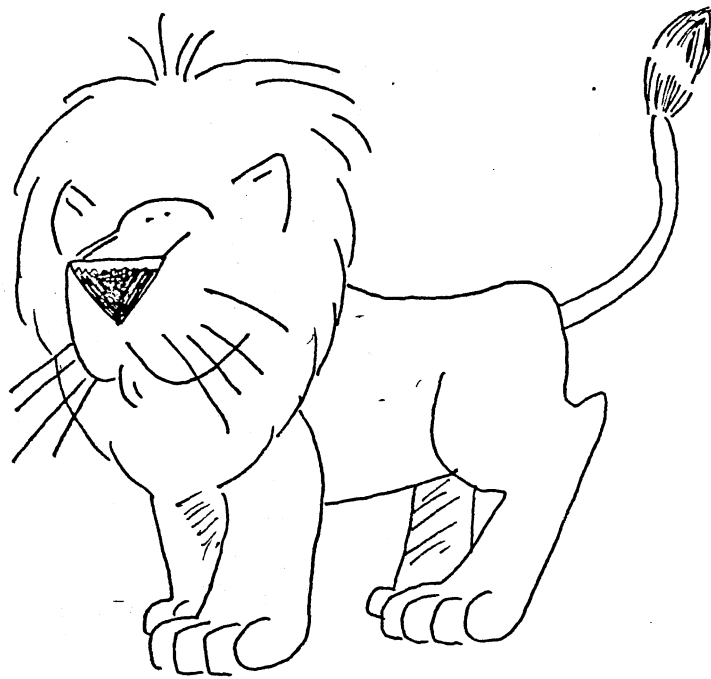
NEW FEELING _____

NEW RESULTS _____

CHAT - CHAT'S GREAT ESCAPE

OR

CHAT - CHAT AND THE ELE-DILE



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illustrations by Andy Brown
and Gary W. Gerber

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APPENDIX B

Parent Letter

January 4, 1984

Dear Parent:

The Broken Arrow schools, in cooperation with Oklahoma State University, are conducting a research project involving your child's classroom. The project involves the use of a set of instructional activities designed to help students think in a logical manner. The teaching techniques are designed for use with children who have a problem solving style that involves acting before thinking through a task or the consequences of a particular action.

Teachers will be instructing students twice a week during the third nine weeks. The goal is to teach students to stop and think before they act. The instructional techniques are contained in two manuals titled the "Clear Thinking Method". These manuals will be available for your review on Friday, January 6. The manuals will be located in Room 105 at the Special Services Center, 112 No. Main. If you are interested in looking at these materials, please do so between the hours of 9:00 a.m. and 3:00 p.m. I will also be available during those hours to discuss any other questions you might have.

If you do not wish your child to participate in this activity, send a written note to your child's teacher.

If you have any other questions about the project, please feel free to call me at 258-5545.

Sincerely,

BROKEN ARROW PUBLIC SCHOOLS

Gary W. Gerber,
Administrative Assistant
for Special Services

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APPENDIX C

Unadjusted Pretest and Posttest Means and Standard Deviations

Variable	Experimental Group (21)				--	Control Group (19)			
	Pretest		Posttest			Pretest		Posttest	
	M	SD	M	SD		M	SD	M	SD
Woodcock-Johnson Reasoning Cluster									
Antonyms-Synonyms	16.619	4.272	18.143	4.475		16.158	4.598	16.895	4.569
Analysis-Synthesis	15.857	3.665	17.619	3.138		14.579	4.286	16.684	2.888
Concept Formation	12.333	4.973	15.476	4.833		4.105	5.363	16.211	4.756
Analogies	14.238	3.767	14.762	4.158		14.263	3.619	14.526	3.454
Matching Familiar Figures Test									
Latency	9.674	4.758	11.487	3.918		9.797	5.260	11.242	5.440
Error Score	1.127	0.349	0.913	0.389		1.105	0.450	0.769	0.418
State-Trait Anxiety									
Trait Scale	37.619	6.422	36.381	7.513		38.526	7.441	38.947	8.141
Piers-Harris Self-Concept Scale									
Behavior	12.000	3.114	10.714	4.101		12.000	3.367	11.316	3.18
Intellectual and School Status	11.952	3.369	11.571	4.377		11.158	3.468	12.21	3.066
Physical Appearance and Attributes	8.143	3.395	7.619	3.626		8.526	3.306	9.053	2.147
Anxiety	9.476	2.994	9.238	3.161		8.789	3.172	8.895	3.695
Popularity	7.238	2.709	6.905	3.254		6.947	2.345	7.316	2.162
Happiness and Satisfaction	7.762	1.758	7.000	3.066		7.842	2.363	7.842	1.979

VITA ²

Gary Wayne Gerber

Candidate for the Degree of

Doctor of Education

Thesis: MODIFYING IMPULSIVITY IN HANDICAPPED CHILDREN
THROUGH THE DEVELOPMENT OF RATIONAL THINKING

Major Field: Educational Psychology

Biographical:

Personal Data: Born in Tulsa, Oklahoma, September 25,
1950, the son of Robert and Jeanne Gerber; married
to Betty with two children, Jennifer and Gary.

Education: Graduated from Broken Arrow High School,
Broken Arrow, 1968; received Bachelor of Science
degree in Psychology from Oklahoma State
University in May, 1972; received Master of
Science degree in Educational Psychology from
Oklahoma State University in May, 1974; completed
requirements for the Doctor of Education degree at
Oklahoma State University in December, 1984.

Professional Experience: Psychometrist, Western
Oklahoma Title III project, Woodward Public
Schools 1973-1974; Psychometrist, Broken Arrow
Public Schools 1974-1979; Director of Special
Services, Broken Arrow Public Schools 1979-1983;
Administrative Assistant, Broken Arrow Public
Schools 1983-present.