The Application of Behavioral Principles to the Modification of an Acting Out Child's Classroom Behavior in a Regular Classroom

Marjorie M. McArthur

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THE APPLICATION OF BEHAVIORAL PRINCIPLES
TO THE MODIFICATION OF AN ACTING OUT CHILD'S
CLASSROOM BEHAVIOR IN A REGULAR CLASSROOM

by

Marjorie M. McArthur

A Thesis
Submitted to the
Faculty of the School of Graduate
Studies in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
August, 1967

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ACKNOWLEDGEMENTS

The experimenter wishes to express her sincere gratitude to Dr. Robert P. Hawkins for his generous assistance and guidance during the course of this experiment. She would also like to thank Dr. B. L. Hopkins and Dr. C. Koronakos for their assistance. The investigator wishes to give a special note of appreciation to the teacher, Mrs. T. Nederhoed and the principal of the school, Mr. R. Vander Scheer, for their cooperation, to the observers, Irene Bitinas and Donald Jackson for their helpful suggestions; and to Patricia Rinaldi for her invaluable support during moments of trauma. In addition, the support of this program by Mr. Marland E. Bluhm, Director of Special Education and Mr. Albert L. Bradfield, Superintendent, is acknowledged.
McARThUR, Marjorie Moira
THE APPLICATION OF BEHAVIORAL PRINCIPLES
To THE MODIFICATION OF AN ACTING OUT
CHILD'S CLASSROOM BEHAVIOR IN A REGULAR
CLASSROOM.

Western Michigan University, M.A., 1968
Psychology, experimental

University Microfilms, Inc., Ann Arbor, Michigan
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INTRODUCTION

The disturbed behavior patterns of the "acting out, aggressive" child generally predispose him to be a behavioral problem in the regular school classroom. Usually school becomes a major focal point in his inability to adjust, as it is generally the first place that his disturbed behavior has a detrimental effect on many individuals outside the members of his own family.

The following general types of poor classroom behaviors usually characterize the acting out child: inattentiveness; hyperactivity; distractibility; lack of self control; learning difficulties and negative relationships with peers and school personnel. When exhibited in a regular classroom the behavioral problems severely impede the functioning of the entire class. The acting out child's disruptive behavior generally undermines the overall teacher control in the classroom, disrupts most teaching situations, distracts other children's attention and consequently, greatly inhibits the learning of his classmates. Likewise, his nonsocial and antisocial behaviors acutely delimit his own acquisition of the academic responses associated with skills such as reading and arithmetic. Such aggressive children generally fail to respond to the control techniques that the teacher employs with the other children.

Frequently, when such behavior appears in the school setting and no treatment procedures are implemented, the child's social maladjustment and academic retardation gradually becomes more and
more severe. The child experiences increasing failure in learning and greater frustration in the school situation. Often he is advanced in school even though his level of academic learning is far below the grade level of his classmates because no one knows what to do with him and certainly no teacher wants him in her grade a second year. If the school system has a Special Education program for emotionally disturbed children, he is likely to be referred to this program. In the Special Education classroom the child’s behavior may or may not be significantly modified depending on the techniques employed but at least some modification is likely to occur simply because the child is given tasks more adequately adjusted to his level of achievement and is given more individual attention. However, Special Education facilities for emotionally disturbed children are very limited in number and the child is likely to remain for months or years within the regular school system, where he simply falls further and further behind. In this time his behavior problems are likely to become more acute and the other children in his class continue to be adversely affected by his actions.

In such a situation, it seems imperative that something be done to alleviate the disruptive effects of the acting out child’s behavior on both his classmate’s and his own opportunity to learn. The implementation of a program wherein the child’s behavior could be modified within the regular classroom setting would be advantageous for numerous reasons. First, it is detrimental to the child, to
the teacher, and to the other children in the classroom to allow his disruptive behavior patterns to continue or become more serious. Second, a treatment procedure right in the regular classroom setting should render it possible to modify a child's behavioral disturbance as soon as it appears rather than waiting until his problem becomes so inflated and his academic level so low as to warrant his removal from the regular classroom. Third, Special Education facilities are limited and expensive. Fourth, if it is possible to treat the problem child directly in his own classroom, the problem of generalization from Special Education rooms to the regular classroom is largely overcome. Fifth, if the deviant behavior of the child labeled "disturbed" can be modified by certain techniques, these techniques should be similarly successful with the children considered to be only minor problems in the classroom.

When confronted with a disruptive child the teacher, the school social worker, the school psychologist or other school personnel can refer to numerous alternative theories regarding the treatment of such a child. Most theoretical viewpoints concerned with the education of the disturbed or problem child operate on the assumption that the problem behavior is but an expression of unconscious conflicts and tensions, unsatisfied needs and poor ego or superego control. Stress is placed on the importance of treating internal causes rather than the "symptomatic" outward behavior. This general approach to
maladaptive behavior and the teacher's role in dealing with it is adeptly summed up in the following statements: "The symptoms are only indicators that something is wrong. Too many teachers deal only with the symptoms and totally neglect to reach an understanding by getting to the origin" (Bernard, 1960, p. 130); "While it is sometimes beneficial to give symptomatic relief, a major focus on symptom removal rarely helps a child resolve his basic problem" (Blackham, 1967, p. 84).

Another characteristic of most approaches to the education of the disturbed child is that they consider the classroom to be a rather unimportant element in the therapeutic treatment of the disturbed child. The major source of treatment is considered to come from a trained therapist who sees the child outside the school setting. The emphasis is for the teacher to somehow support the work of the therapist and in order for her to do this it is considered that she "must have some understanding of parent-child relationships, individual personality dynamics, social cultural factors, unconscious personality factors, both teachers and students, and the group dynamics within the classroom" (Blackham, 1967, p. 140).

Furthermore, the various types of approaches presented so far in the discussion have a similar viewpoint on the importance that the role of actual educational procedures should take in the treatment of the disturbed child in the school setting. The feelings of these theoreticians on this subject are adeptly
summed up by Haring and Phillips (1962): "The major portion of the literature...deals more with causes, behavior symptoms, and methods of treatment than with methods and curricula for teaching. It is widely believed that the education of the emotionally disturbed child be secondary to the treatment of his emotional illness" (p. 17).

The more traditional approaches to the education of the disturbed child referred to above are rooted in varied theoretical schools of psychology and psychiatry. The most common traditional approaches are either based on traditional or neo-Freudian psychoanalytic theory or on a client centered frame of reference. For the proponents of any of these three theoretical frameworks, the focal point in the therapeutic treatment of the disturbed child in the educational setting is the teacher pupil relationship. The emphasis in these approaches is on the proper type of teacher personality and/or on her understanding of the child's needs and the underlying causes of his problem behavior. Techniques for handling and directly modifying overt behavioral patterns are seen as being relatively unimportant in comparison to uncovering inner conflicts. Speaking from a traditional psychoanalytic framework, Pearson (1954) states that the most important contribution made by psychoanalytic theory to education is the knowledge that learning begins through "mutual love between teacher and child -- a positive object relationship" (p. 251) and therefore, the most essential prerequisite for learning is for the teacher to have
an "adequate" personality. The feelings of the neo-Freudian mental hygienists on this topic are reflected in the following statement: "...in dealing with a child and his problem one should more importantly work toward developing a satisfying relationship with the child than toward applying the right method" (Blackham, 1967, p. 89). Furthermore, the advocates of any of the psychoanalytic approaches, traditional or neo-Freudian consider the teacher's understanding of personality structure and dynamics and the underlying causes of behavior to be essential prerequisites to the establishment of a therapeutic relationship with the child (Berkowitz and Rothman, 1960; Bettleheim, 1951; Blackham, 1967; Redl and Wattenburg, 1951; Redl and Wineman, 1957). Similarly the central figure in the client centered orientation, Rogers (1951), feels that the primary factor in creating an appropriate climate for a therapeutic classroom is a permissive teacher attitude which allows the expression of underlying negative feelings. While it is probably true that the teacher pupil relationship is a prime factor in the adequate treatment of the disturbed child, such statements as those cited impart little information to those individuals concerned directly with educating those youngsters. What exactly does one do to establish a warm, satisfying relationship with a disturbed child? Does this mean that one should be sweet and affectionate to a child regardless of his behavior? Furthermore, what does it mean for the teacher to have an adequate, well
adjusted personality? How does one obtain an understanding of causal factors and personality dynamics that are supposed to help one deal with the child in the classroom setting? What does adopting a permissive attitude in the classroom mean? In the last analysis, the teacher must decide how she is going to react to the overt behavior the child exhibits in the classroom and the type of suggestions made by the former theorists in regard to the type of relationship that she should establish with the child assist her little with such a decision.

It is also disappointing to note that when these theorists endeavor to more explicitly delineate either techniques of handling symptomatic behavior, general ways a teacher should act toward the disturbed child, or types of programs she should set up, the teacher or any other helping individual is usually still confused about the course of action due to the lack of specificity of theorists' statements. For example, mental hygienists who are followers of Redl, (Blackham, 1967; Long and Newman, 1965; Redl and Wattenburg, 1951; Redl and Wineman, 1957) enumerate four alternative ways for managing undesirable surface behavior in the classroom: 1) tell the children which behavior is permissible and which is not 2) tolerate behavior that is symptomatic of intrapsychic conflict 3) interfere with behavior, if necessary for learning to take place, and 4) plan the situation to prevent the occurrence of the behavior. Several specific interference techniques are cited (Blackham, 1967; Long and
Newman, 1965; Redl and Wattenburg, 1951; and Redl and Wineman, 1957) but the situations in which behavior should be interfered with and the type of technique that should be used are vague. Thus, although many of these techniques are probably effective methods of manipulating behavior, it is difficult for the teacher to know just what behaviors she should permit, which she should tolerate because they are symptoms of underlying conflicts and with which ones she should interfere. Furthermore, these techniques are seen only as a means to "maintain certain surface behaviors over some rough spots" (Long and Newman, 1965, p. 365). To establish a therapeutic program whereby psychic conflicts can be resolved supposedly requires the teacher to have a thorough knowledge of the underlying dynamics of the individual personality and the group. Then once again the question is how the regular classroom teacher can acquire such knowledge and then how this knowledge of the underlying dynamics assist her in dealing directly with the behavior of the problem child in the school setting.

Several mental hygenists (Blackham, 1967; Bernard, 1961) have added their own thoughts to Redl's basic approach and have enumerated numerous ways the classroom teacher should act or traits that she should develop in order to help the child resolve his basic problem. These authors make suggestions such as: relate to the child in a predictable, approving and accepting way; allow the child freedom to express his feelings without censure; provide an environment that is rewarding and
satisfies his needs (Blackham, 1967) and develop a wholesome discipline through adopting a cooperative, fair and consistent attitude (Bernard, 1961). Even with the examples that accompany many of their suggestions, it is difficult for the teacher to know what to do on the basis of such statements when she is confronted with a particular behavior in a specific situation.

A similar dilemma exists for the teacher when she seeks assistance in the suggestions of the more traditional psychoanalytic theoreticians. For example, Pearson (1954) presents a predominantly theoretical discussion of the role of internal conflicts between the instinctive psychic energy and the ego structures in the learning process. He feels that insight into these underlying mechanisms of behavior will give the teacher guidance in teaching the reality principle to children who have failed to learn it. He enumerates several characteristics that he feels a therapeutic teacher should have: "imagination; unconscious, innate intuition; empathy" and the ability to understand the psychological needs of the child. The nature of his approach is such that his proposals communicate little meaning to a teacher who is faced with educating the acting out child. As with Pearson, Bettleheim, in his summary of his psychoanalytically oriented school program for disturbed children (1951), provides the teacher with a modicum of guidance in her treatment of the disturbed child. He advocates such things as: satisfy the child's wants; provide him with models
of predictability and orderliness; emphasize emotional growth rather than achievement; and make the classroom into a reassuring place.

A more contemporary psychoanalytic approach to the education of the disturbed child in which a similar lack of specificity is evident is that of Berkowitz and Rothman (1960). They propose need acceptance therapy in which the ideal teacher pupil relationship is one of acceptance. From the beginning the teacher should accept the child's behavior completely and then she should gradually show some disapproval of undesirable behavior while maintaining complete acceptance of the child as an individual. Furthermore, they state: "In response to the child's behavior the teacher assumes the various role characteristics that are imposed as they arise from the child's emotional needs" (Berkowitz and Rothman, 1960, p. 128). Even after a careful perusal of the illustrative examples accompanying such statements, it would be difficult for a teacher to decide how to handle a particular behavior she encounters based on these authors' suggestions, as the statements they make are so abstruse as can be seen from those suggestions cited, and the examples they give so situational specific.

Of any of the proposals regarding the therapeutic treatment of the disturbed child in the classroom that originate from within a psychoanalytic frame of reference, those suggestions set forth by Grossman (1965) appear to come closest to delineating
definite methods of handling certain types of behavior problems. He advocates a case study approach in which general techniques for handling certain types of behavioral problems are derived and formulated through the analysis of actual case studies of the treatment of such children. For the uncontrolled, aggressive child he suggests several techniques which he has found to be beneficial in dealing with such children: keep his needs well satisfied so that the need for such behavior does not arise; remind the child that if he waits his turn, he will eventually get what he deserves; do not reward impulsiveness; set up a system of rewards whereby he can earn something special by delaying gratification; and establish an extremely ordered routine. However, he cautions against overgeneralizing techniques from one case in which overt behaviors were successfully modified to another one in which the child exhibits similar patterns of behavior, because often the behaviors exhibited are only "inappropriate solutions for underlying problems which themselves require varying techniques" (Grossman, 1965, p. 118). Thus, once more the problem is that of treating the underlying cause rather than the symptomatic behavior and the teacher is again at an impasse because she has very little basis from which she can evaluate the underlying factors and thus, from which she can deduce the proper technique.

Another completely different approach to the management of classroom behaviors, one not based on psychoanalytic theory, is
the client centered orientation. In regard to how the teacher should handle particular overt behavioral problems or how generally she should act toward the child, lack of specificity is also evident in this frame of reference. Rogers (1951) advocates the establishment of a permissive accepting atmosphere but provides the teacher with little in the way of techniques whereby such a program might be established or where limits on permissiveness should be set. Basically the teacher's role, he states, would be to set a permissive atmosphere by accepting all feelings and statements without judgement. This permissive atmosphere may be established by numerous techniques but the teacher's attitude is the important factor, not the technique employed. It is difficult for the teacher to know exactly what he means by adopting a permissive attitude; does he mean ignoring negative comments or encouraging their expression? Also, just how permissive should one be? With the acting out child it seems that some of his destructive behaviors simply could not be tolerated in the classroom due to the adverse consequences of such actions either upon himself or upon others.

The various approaches and techniques for the treatment of the emotionally disturbed child discussed above provide the teacher and other school personnel with only fragmental information for dealing with the behavior of the acting out aggressive child within the regular classroom setting. In addition to the fact that the statements these theoreticians make are generally abstruse.
and vague, and thus communicate little meaning to the teacher or others, the connotative value of the types of behavior that they suggest the teacher should exhibit towards the disturbed child are also often contradictory. For example, when faced with a specific aggressive response should she be tolerant, firm, supportive, accepting or reassuring. Furthermore, if she does decide to be, say reassuring, what exactly does that mean she should do? Any of the previously discussed theoretical frameworks give little acknowledgement to those questions which the classroom teacher and other individuals concerned with educating the aggressive acting out child would like answered; questions such as: If a child exhibits a particular objectionable behavior that prevents his learning or disrupts the learning of other children, how can the teacher change his behavior to a more adaptive and acceptable pattern; what can a teacher do to get the hyperactive child to sit in his seat and pay attention so that she might teach him some academic skills; what can be done to motivate such a youngster to do his school work and do it correctly; how can such a child be taught to obey the teacher's and other adult's instructions? These, plus many other questions regarding how one might secure more adaptive and less disruptive behavior from the acting out aggressive child within the regular school setting plague the teacher and other individuals concerned with his education. The answers are simply not found in the more traditional approaches.
to the education of the disturbed or problem child.

The theoretical approach from which the study to be presented here derives its basis differs in many respects from those viewpoints presented so far in this discussion. There is a distinct contrast between the theory on which this study is based and the more traditional approaches in theoretical postulates, assumptional bases and stress placed on specific techniques of behavior change. The general frame of reference as well as the particular techniques employed is reinforcement theory (Keller, 1954).

In the reinforcement theory frame of reference maladaptive behaviors, as well as adaptive behaviors, are assumed to be learned responses acquired as a result of certain functional relationships between stimuli and responses within the individual's past or present environment. Maladaptive behaviors are viewed not as symptomatic representations of underlying psychic conflicts but rather as responses determined and maintained as a function of the person's unique reinforcement history. Thus, these maladaptive behaviors can be eliminated and adaptive behaviors established or strengthened through the systematic manipulation of reinforcement contingencies within the individual's environment.

Thus, in regard to the acting out aggressive child, if one accepts the assumptions of the reinforcement approach the problem becomes focused on the disruptive behavior that the child exhibits.
rather than on an internal conflict. The concern in therapy shifts from uncovering the assumed underlying causes of behavior to directly modifying the behavior. The therapeutic aim becomes that of decreasing the occurrence of undesirable behaviors and increasing the occurrence of desirable behaviors. Furthermore, the modification procedures used are based on concise and valid scientific principles of behavior, first uncovered in animal research and later applied to the modification of human behavior. Very simply, if the behavior the child exhibits is one deemed desirable by the teacher, she should reinforce it, i.e. follow its occurrence immediately with some pleasurable event. If the behavior is one whose rate the teacher wishes to decrease she should ignore it or punish it immediately. A more detailed description of the procedures derived from this approach will be presented in the description of the study.

In addition to the previously stated contrasts, this approach differs from the more traditional approaches in terms of how it views the importance of changing academic behaviors and the importance of classroom procedures in the therapeutic process. The therapeutic aim in utilizing reinforcement procedures in the classroom is to change academic behaviors and social behaviors, although no attempt is made to resolve underlying conflicts. The modification of classroom behaviors is viewed as a very important and often essential part in the treatment of the child's problem rather than as a treatment process of secondary importance to outside agencies.
Furthermore, basic to this approach is the objective demonstration of the efficacy of reinforcement techniques. Numerous investigators have presented objective data that illustrate the power of the systematic application of these techniques in changing human behaviors, both child and adult (e.g. Krasner and Ullman, 1965; Ullman and Krasner, 1965; Ulrich, Stachnik, and Mabry, 1966). The application of these principles to the modification of deviant child behaviors outside the classroom setting has become increasingly widespread in the past decade. During this time experimenters have successfully and objectively demonstrated their ability to change, build or eliminate various kinds of child behavior through the systematic application of behavioral principles, so that following treatment the child, was better adjusted to his present or future social or physical environment. For example, the application of conditioning procedures has been successfully applied by Wolf, Risley, and Mees (1964); Ferster and DeMeyer (1962); Lovaas, Berberich, Perloff and Schagger (1966); and Hewitt (1965) to the modification of behavior patterns in autistic children; by Baer (1962) to the control of thumbsucking; by Patterson (1965) to the reduction of hyperactivity; by Williams (1959) to the elimination of excessive scratching; and by Hawkins, Peterson, Schweid and Bijou (1966) to the reduction of several undesirable behaviors through modification of the parent-child relationship.
A few investigators have been concerned with the implementation of reinforcement principles within the classroom setting. A series of studies was conducted by the personnel in the Laboratory Nursery School at the University of Washington with normal youngsters as the subjects. Through the systematic application of social reinforcement, the teachers in this school were able to alter several undesirable responses: isolate behavior (Allen, Hart, Buell, Harris and Wolf, 1964); excessive crying (Hart, Allen, Buell, Harris and Wolf, 1964); and regressed crawling (Harris, Johnston, Kelley and Wolf, 1964). A summary of the findings of the investigators at this school in regard to the effects of adult social reinforcement on child behavior are presented in a paper by Harris, Wolf and Baer (1964).

Recently, several educators have become interested in implementing programs based on reinforcement procedures in special education rooms for emotionally disturbed children. To this time, however, the articles written and published have been mainly concerned with a description of the design of the classroom procedures and impressionistic results, rather than the presentation of a systematic modification procedure and objective behavioral data. Zimmerman and Zimmerman (1962) report the successful elimination of unproductive classroom behaviors with two emotionally disturbed boys through the systematic application of social reinforcement and extinction procedures by the teacher. Peters (1962) indicates that he has obtained favorable changes in classroom behavior through the application of reinforcement procedures wherein
the child is presented with a very brief and definite assignment at his academic level and allowed to move to a more enjoyable activity when the assignment is completed.

Haring and Whelan (1965) and Whel an and Harring (1966) describe a research program employing reinforcement principles in a special education classroom for emotionally disturbed children at the University of Kansas Medical Center. Throughout the program, the tasks assigned to the children are such that their chances of success are very high. Reinforcement activities such as juice breaks and art activities are awarded when the child completes a designated series of tasks successfully. Good behavior is praised (socially reinforced) as immediately as possible. Disorderly conduct is generally ignored (extinguished), but when necessary, the child is isolated (punished with time out from positive reinforcement). As the child's behavior comes under the control of the reinforcers the teacher moves from a relatively continuous reinforcement schedule to a more intermittent one. Their 1966 article presents a description of the successful modification of one child's inattentive behavior through the teacher's systematic dispensing of social reinforcement contingent on appropriate working behavior. Furthermore, they report a desirable change in classroom behaviors through the application of the Premack principle; i.e. high frequency behaviors such as building model airplanes are made a consequence for engaging in low frequency behaviors such as
reading and arithmetic.

Hewett (1966) describes the basic set-up of his two experimental classrooms employing operant techniques; one for under achievers with learning problems and one for institutionalized disturbed children. Hewett conceptualizes the role of the teacher to be that of a behavioral engineer. Her job is to present the student with appropriate task assignments, reward adaptive behavior and set up a structure and strict limits in order to eliminate or reduce maladaptive behavior. Structure is provided by the teacher through the establishment of definite contingencies for certain behaviors. Positive reinforcers are presented following the emission of appropriate behaviors and withheld following inappropriate behavior. In addition, negative reinforcers may be presented as a consequence for inappropriate behavior. The youngsters in this program earn token checkmarks for good behavior which are exchangeable for material items. Hewett states that his preliminary observations in his classroom "suggest that changes in work efficiency and adaptive behaviors occur quickly. One of the aspects that most impresses observers is the purposeful controlled and productive atmosphere in the classroom" (p. 466).

Quay, Werry, McQueen and Sprague (1966) present primarily a descriptive paper supported by some data from their experimental classroom for emotionally disturbed children. These researchers suggest that appropriate behavior can be obtained in one of three
ways; by verbally cueing the child; by having the child observe appropriate models emitting the desired behavior and being reinforced for it; or by shaping. Also, they note that the major problem with most hyperactive children is inattentiveness; a collection of responses which inhibits the acquisition of academic responses. Therefore, their first goal with these children is to condition attentive behavior. These investigators report figures demonstrating successful increments in the children's attentive behavior as a result of the teacher's dispensing of candy to those children who are looking at her during storytime. Also, they report success in remediying academic retardation through the use of individualized programming techniques. They are now attempting to modify the social inadequacies of these children through the use of reinforcement techniques coupled with modeling procedures.

Vallett (1966) presents a detailed model of a total social system based on reinforcement principles that might be implemented within a regular classroom to modify behavioral problems within that classroom. However, he has not attempted to apply his model to the actual situation.

In the study to be presented in this paper, a child's maladaptive classroom behavior was modified through the systematic application of contingent social reinforcement, candy, and token reinforcement. The disturbed behavior patterns that the child exhibited were such that he might be described as aggressive and acting out. The modification procedures were
carried out directly within a regular classroom setting. One primary goal of the study was to evaluate the efficacy of reinforcement procedures in the treatment of the disturbed behavioral patterns of the problem child within the educational setting. To assist in the assessment, objective behavioral data were obtained in order to determine whether or not the techniques being utilized were having the desired effect.

A second aim of the study was to evaluate the feasibility of treating such a child right in a regular public school classroom. It was felt that many behavior problems could be more efficiently modified within the public school setting for several reasons. In the special education room the child is typically presented with numerous models exhibiting inappropriate behavior. Therefore, his behavior problems may actually become more acute in this setting. The children with whom he interacts in the regular classroom are generally emitting much more desirable behavior for him to imitate. Also, with a little training, these normal children may serve as very effective modifiers of the classmates deviant behavior. Another advantage of treatment within a regular classroom setting is that the problem of generalizing therapeutic effects achieved in the special education room to the regular classroom is eliminated. Also, the regular classroom teacher may readily be taught techniques whereby the child's adaptive behavior patterns may be maintained.

Finally, the study also attempted to assess whether or not intensive treatment during part of the school day would have
any effect on the child's behavior during the rest of the day. Objective data were gathered to determine whether or not such generalization had occurred.
METHOD

Subject

The subject (S) in this study is Ronnie, an 8 year old boy who during the experiment was enrolled in a public school second grade classroom. Prior to the experiment he had been referred to a special education program for emotionally disturbed children due to his poor academic achievement and his intolerable classroom behavior. Ronnie had been a problem child at school since his kindergarten year. His inability to adjust to school during his first grade year resulted in his being retained in that grade for an additional year. Each of his teachers in his four years of school have reported him to be an extremely difficult child to control and to teach. The teacher, whose classroom he was in during this study, described him as "impossible". Prior to the experiment Ronnie exhibited undesirable behavior during the greater part of the school day. His objectionable behavior usually included one or more of the following responses: 1) talking when he should not have been; 2) shouting out disruptive comments when the teacher was teaching a lesson; 3) uttering sundry versions of distracting noises such as barks, meows and burps; 4) walking or crawling on all fours about the room; 5) disturbing other children by poking them, wrestling with them or talking to them. During her observation of the child the experimenter (E) saw several incidents of destructive behavior such as breaking records, smashing
his wristwatch and pounding his desk with numerous types of hard objects. Moreover, his activities generally resulted in a rather chaotic situation in which all the children were adversely affected. A month or so prior to the beginning of the experiment he had been expelled from school for a three day period and just prior to the experiment considerations were being given to excluding him from school on a more permanent basis.

In addition to those behaviors just mentioned, Ronnie was reported by his teacher to be very belligerent when confronted directly with anything for which he was to blame. She indicated also that he often took things that other children brought to school and said that they belonged to him. He had been known to steal money from the teacher's desk. The E noted that whenever anything was missing from the classroom or school, Ronnie's immediate response was "I didn't take it".

Ronnie's academic behavior, as well as his social behavior in the classroom, left much to be desired. He was inattentive for the greater part of the day and rarely attempted his school assignments. His reading ability was minimal and due to his low level of reading skills he was not included in any reading group in the room. He could only recognize two or three phonetical symbols. His arithmetic accomplishments were considerably below his classmates but not as retarded as his reading skills. Prior to the experiment his score on the Metropolitan Achievement Test in the arithmetic section was a 1.3 grade level. He was unable to even attempt the reading section
of this test. He printed quite well but refused to attempt cursive writing. When the teacher endeavored to get him to do any type of assignment he immediately became negative and said he could not or would not do it. His scores on intelligence tests were as follows: 1964 Peabody Picture Test, 112; 1965 SRA Primary Mental Ability, 105; 1965 a repeat of the SRA, 100.

Ronnie is the youngest of five children in a lower middle class family. All of the children except one have repeated one grade in school. One of the other boys in the family was also a behavioral problem in school but not nearly as severe a problem as Ronnie. The father works as a laborer in a factory. The mother also works outside the home. Ronnie's teacher described the home situation as poor and beset with parental conflict.

On visits to the home prior to and during the experiment E noted that Ronnie was extremely hyperactive most of the time. He stood on the television and other furniture; he rarely obeyed orders given by his mother or his brothers or sisters; he was often very disruptive and disorderly. His mother indicated to E that Ronnie was generally extraordinarily active about the home and that she found him practically impossible to control. She also reported that he would continually bother his brothers and sisters in the evening by kicking them and preventing them from watching television.

Prior to the experiment Ronnie and his mother had been seeing a child psychiatrist for three months. They continued to see him every two weeks throughout the experiment. The mother reported
that she did not feel that these visits were helping the child. The psychiatrist told the experimenter that he was having very little success with the child and described Ronnie as the most severely disturbed child that he was treating at the time.

His psychiatrist had prescribed several types of drugs hoping to alleviate the child's problem behavior. Ronnie had been on 20 mg. Ritalin three times a day for three months preceding the experiment. The type of medication or dosage was changed several times after Ronnie was first placed on Ritalin because the drugs did not significantly improve his behavior at home or at school. During the experiment to be described here, his drugs were altered twice. On February 13 his Ritalin and Mellaril dosages were doubled to 40 mg. and 100 mg. respectively. On February 25, a 25 mg. dosage of Trofanil was added to his medication. The latter two alterations were made in an attempt to alleviate his disruptive behavior at home.

Procedure

On several afternoons during the baseline period, E. observed Ronnie's behavior in his public school classroom. It appeared to E that much of Ronnie's objectionable behavior was being maintained by the reinforcement provided by peer attention and, perhaps, some very limited teacher attention. Social reinforcement has been found
to be a very effective controller of child behavior (Gerwitz and Baer, 1958; Harris, Wolf and Baer, 1964). When Ronnie exhibited any of his disruptive behaviors, some of his classmates would generally respond to him in one of the following ways: 1) look at him 2) laugh at him 3) comment on his behavior 4) speak directly to him or 5) imitate him. On the other hand, the boy's occasional appropriate responses passed unnoticed or at least unreinforced. At one state in the experiment, experimental procedures were implemented in which special reinforcement contingencies were placed on Ronnie's desirable classroom behaviors. In another phase an attempt was made to change Ronnie's classmates behavior by reinforcing the other children for ignoring Ronnie's objectionable behaviors.

Almost any time the teacher gave an instruction, Ronnie would immediately proceed to do just the opposite. When his behavior became disruptive the teacher would often threaten to send him to the principal's office or to send him out of the room. Generally, however, she failed to carry through on these consequences or was prevented from doing so by his refusal to go. The teacher was asked during the experimental phases to ignore (extinguish) all undesirable behaviors.

It also appeared to E that, due to his academic retardation, the work with which he was being confronted afforded him little or no chance of success. Thus, he had little opportunity to obtain the reinforcement that the other children obtained by doing their school work. On-rare occasions when he attempted to do the work, his
typical response was a negative one; he would whine and say he could not do it. Also, he often tried to copy other children's work. Thus, another procedure was instituted in which the child was presented with academic assignments programmed to his level of academic skills in special tutoring session.

In order to obtain objective data on the changes in certain behaviors as a function of reinforcement procedures, observers were placed in Ronnie's classroom during part of the morning and all of the afternoon. These observers recorded the presence of three objectionable behaviors and two desirable behaviors. These five categories of behavior were respectively: 1) vocalizations out of turn 2) being out of seat 3) negative comments 4) being attentive 5) handraising. Teacher and peer attention to the S's behavior were also recorded. A more exact definition of these behaviors is included in Appendix A. The frequency of occurrence of all these categories of behavior was measured by recording for each successive ten second interval whether or not the particular behavior occurred during that period of time. Data were also obtained on Ronnie's productivity in handwriting, spelling, and arithmetic during the afternoon. In handwriting and spelling, productivity was defined as the number of letters he wrote per minute and in arithmetic, the number processes (a number process was such things as his writing one number, circling the correct answer or writing the word, "yes").
These data were recorded by two observers; one in the morning and one in the afternoon. The observers were seated at the side of the room where they could easily observe the child. Ronnie did not appear to be aware that he was under observation. The child was observed during the morning from 8:30 to 10:30 and in the afternoon from 1:00 to 3:30. Based on the consistency of occurrence of class activities in the day to day schedule, four were chosen for data recording during the afternoon block and two during the morning block. In the afternoon these periods were: Spelling, Group Number Study; Individual Number Study; and Cursive Writing. In the mornings the periods were: Sharing and Individual Seat Work.

In order to assess inter-observer reliability, two observers recorded the occurrence of all behavioral categories on three afternoons during the course of the experiment, once during Baseline, once during Experimental I and once during Reversal. The observers positioned themselves so that one observer could not detect when the other observer had scored a response. The reliability was obtained by dividing the smaller score on each behavioral category by the larger score. For example, if one observer noted that the child talked out of turn in 73 ten second intervals and the other observer ten second intervals, the reliability would have been calculated by dividing 73 by 80. Agreement on the behaviors ranged from: 1) .83 to 1.00 for out of seat behavior; 2) .92 to 1.00 for vocalizations out of turn;
3) .75 to .80 for attentive behavior; 4) .86 to .88 for peer responses and 5) .95 to 1.00 for teacher responses.

The experiment was divided into several stages: Baseline period; Experimental I (afternoon); Reversal; Experimental II (afternoon); Experimental III (afternoon); Experimental IV (Morning); Experimental V (afternoon). A nine day baseline was secured in the afternoon on the behaviors previously enumerated: 1) out of seat behavior; 2) vocalizations out of turn 3) attentive behavior 4) negative comments; 5) hand-raising and 6) productivity measures for Spelling, Number Study and Cursive Writing. A 14 day baseline was taken during the morning on the occurrence of the following behaviors: 1) out of seat behavior; 2) vocalizations out of turn; and 3) attentive behavior. During the baseline phase of the experiment the teacher, child and peers interacted in the manner in which they were accustomed. The E and the observers were free to speak to the teacher but did not advise her in any way on the handling of Ronnie's behavior.

**Experimental I**

Experimental I (Exp. I) was introduced on session #10. Until this time the E had observed the child on several afternoons during the baseline period but the boy had been given no hint that she would be working with him. On the tenth day E started to dispense social, candy and token reinforcement to
the child for desirable classroom behaviors, such as sitting in seat, appropriate silence, working behavior and giving correct answers. She carried this out while sitting beside Ronnie's desk at a small table. Although the value of a stimulus as a reinforcer can only be empirically determined, the E selected several stimuli available that had a high probability of being reinforcing to this child: candy, chips exchangeable for material items such as toys and food; and praise. Despite the fact that it was not really known whether or not these would be effective reinforcers until a change in the child's behavior was observed, these stimuli will be referred to as reinforcers throughout the study. Ronnie was informed on the first day of Exp. I that he could earn candy and tokens exchangeable for toys or food if he would sit in his seat quietly, pay attention to the teacher while she was teaching and work on the assignments given by the teacher. Also, he was shown the different toys he could earn and informed of how many tokens were necessary for each purchase. His tokens were counted at the end of each school day and he was allowed to purchase any items he could "pay" for. Initially, the items were "priced" so that the child could earn something about every second day. The tokens were poker chips which E dropped into a commercial chip rack placed on E's desk so that the child could see how many chips he had accumulated. Initially E had to place a piece of plastic around the holder because the child played with the chips. When S became more controllable, this plastic was removed.
The behaviors for which $S$ received certain types of reinforcers and for which he received the greatest degree of reinforcement changed as Exp. I progressed. During the first few sessions of this phase, $E$ dispensed social, candy and token reinforcement lavishly to the child for simply sitting in his seat quietly. Reinforcement was dispensed as immediately as possible following emission of a desirable response as immediacy of reinforcement has been found to be an important factor in the strengthening of a response (Kimble, 1961). Nearly every time $E$ gave the child a chip or a piece of candy she stated the behavioral contingency involved: for example, Ronnie, this is for sitting in your seat like a good boy." Praise was generally included in such statements by employing adjectives such as "good," "excellent," "fine" or "wonderful." These words were paired with the other reinforcers in an attempt to strengthen the reinforcing value of praise for the child. Due to the fact that the child's relationships with adults were rather disturbed and that it has been previously demonstrated that praise is usually relatively ineffective with disturbed boys (Levin and Simmons, 1962), it was assumed that initially praise would not be a very strong reinforcer. Therefore, the power of this conditioned reinforcer should have been strengthened by systematically pairing it with a stronger reinforcer (Keller, 1954). On session #16 after $E$ felt that the child's in seat behavior and his appropriate silence were under the control of the reinforcers, she began to
reduce token reinforcement for these two behaviors and attempted to maintain them through contingent social reinforcement, candy and a "thin" schedule of token reinforcement. At the same time, she gradually made the chips largely contingent on attentive or working behaviors and on correct academic answers. (Because it was necessary for Ronnie to remain in his seat and be relatively quiet in order to be considered attentive and in order to be productive, this reinforcement probably also helped to maintain appropriate silence and in seat behavior.) The tokens and candy were still accompanied by praise and contingency labels i.e., statements informing the child as to which of his behaviors were being reinforced.

The E attempted to give the S all the stimulus support necessary for him to emit the correct academic response. This technique was employed so that E could secure the academic responses she wanted to reinforce (or an approximation thereof that response) and then gradually fade out the support. Stimulus support in this case took the form of E giving the child all the information required to elicit the desired academic response from him.

The E used several behavioral principles to obtain decreases in rates of undesirable behaviors. Extinction procedures were employed with several undesirable behaviors. Whenever the child was not paying attention or vocalizing out of turn, E turned her attention away from him and focused it somewhere else in the
room until he began exhibiting desirable behaviors again. Counterconditioning procedures i.e., reinforcing a response incompatible with the one you wish to decrease were implicit in the reinforcement procedures.

Punishment was employed with one response to decrease its rate of occurrence. During the first two sessions of Exp. I, the child periodically left his seat in spite of the reinforcement he received for staying in his seat. This behavior interrupted any attempt by the E to have the child follow the continuity of the lesson. Therefore, a five minute time out system was instituted on experimental session #12. Time out from reinforcement has been found to serve as a punisher (Ferster, 1957; Azrin, 1961). The particular time out procedure employed in this study was that as soon as the child got out of his seat the E picked up the chip rack and left the room for five minutes. If the child was still out of his seat when she returned she left for another five minutes. The child was informed of the contingency after the first time out. On session #15 this time out procedure was modified due to the fact that it did not appear to be having the desired effect. In fact, it may have had the function of a reinforcer rather than a punisher, for the S began spending a major portion of his time out of his seat. The child may have been reinforced by the obvious control he was exerting over E's behavior. Therefore, the time out procedure was changed so as to reduce the degree of control he could produce over E's behavior by leaving his seat.
The new procedure consisted of the E simply placing the chip rack on the floor beside her chair and ignoring the child completely for five minutes whenever he left his seat.

The child's negativism was treated by various techniques. Negative comments about E or about the work were ignored (extinction procedure). Resistance toward E's attempts to help the child with his work were treated in one of two ways depending on a subjective evaluation by E as to the degree of resistance. If it was not severe enough to suggest that the child was going to stop working, E endeavored to ignore such behavior and heavily praised the child and gave him extra tokens and candy when he was not resistive. On two sessions when he absolutely refused to do his work and was so resistive that he would not let E help him at all, E used a different technique. First she asked him a few times if he was going to behave properly and told him that if he was not she was going to send him to the hallway until he was ready to behave. When he promised that he would cooperate, she praised him for the verbal response. However, when his verbal agreement had no effect on his resistive, negative behavior, she isolated him in the hallway. This was done two times on session #25 and once on session #26.

Initially the frequency with which reinforcers were dispensed was high. In the beginning session of Exp. I E dispensed slightly more than two chips per minute on the
average. By the end of Exp. I she was dispensing slightly more than one chip per minute on the average. No count was taken of the frequency with which social reinforcement and candy were dispensed. Typically, one chip was given at a time, but if the child made some unusual response that E particularly wished to strengthen, or if he was doing exceptionally well on all behaviors, E would give the child several chips at one time.

The teacher was asked by E to ignore the S's undesirable behavior during the afternoon teaching sessions in case her attention was helping maintain the undesirable responses. Otherwise she was to interact with the child as she had formerly. The experimental procedures were restricted to the hours of 1:00 to 3:30 in the afternoon. Data were still recorded in the morning from 8:30 to 10:30 in order to ascertain whether or not the afternoon procedures had any carry over effects to the morning.

**Reversal**

When desirable and stable changes were observed in the afternoon behavior rates, the Reversal phase was introduced. During this phase, E withdrew herself from the classroom and asked the teacher to treat the S in the same manner as before Exp. I. The child was informed by his mother the evening prior to Reversal that E would no longer
be able to help him. After 8 sessions when the behavior rates had reversed sufficiently to indicate that the changes observed in Exp. I were a function of the experimental manipulations, the Reversal period was terminated.

Following Reversal E introduced the conditions in existence at the termination of Exp. I and introduced one new variable: the other children in the classroom were told by E that S had a difficult time trying to do his school work and that the teacher and E would like them to help S study more effectively. The E informed the children that if they would not pay any attention to S when he talked out in class, made unusual noises and generally when he was not working, the class as a whole would earn tokens on the basis of how well they had accomplished their task. These tokens (poker chips) were dispensed by the teacher, who dropped them into a plastic container at the front of the room. The E asked the teacher to dispense the tokens on the basis of how well she felt the children were doing. The chips were counted at the end of each day and the daily progress of the class recorded on various types of charts. The chips were exchanged for various items such as games and parties. However, this procedure was not too successfully implemented. The teacher found it difficult to observe the behavior of the peers in relation to Ronnie, to remember to dispense the tokens and to teach
all at the same time. Due to the fact that E was too engrossed in working with the child she was unable to signal the teacher when to reinforce; a technique which was found to be helpful in training a mother to reinforce properly (Hawkins, Peterson, Schweid, and Bijou, 1966). The actual operation that resulted was the teacher's dispensing of poker chips contingent on good working behavior of the whole class. However, she dispensed only about 1 to 4 chips per afternoon, which seemed too thin a schedule to be highly effective.

**Experimental II**

During Exp. II and the next two phases E worked toward strengthening the child's working and attentive behaviors. By the termination of the study, during Spelling and Individual Number Study periods the majority of tokens were being dispensed for correct academic responses. A small number were still allotted for appropriate silence. During the Group Number Study period E concentrated mostly on conditioning attentive behavior. Special attention was also paid to correct academic responses and handraising. By session #33 the frequency of dispensing tokens was about one every three minutes. The rate did not change appreciably during the remainder of the experiment.
Experimental III

On session #38, a new procedure was introduced (Exp. III). On two days of the week E took S and another child from the room and tutored S in reading and arithmetic. His arithmetic assignments were constructed so that he could successfully obtain the right answer with a minimum of assistance from E. The reading material used was Sullivan Programmed Reading (Buchanan and Sullivan, 1963), Primer and Book I. Tokens, candy and social reinforcement were largely contingent on working behavior and correct responses. The assignments were initially very brief but they were gradually lengthened. Also, the completion of each assignment earned him a certain amount of free time.

Experimental IV

On session #41 a revision was made in the morning procedure (Exp. IV). The S was given definite individual assignments prepared by E. He was able to earn a certain number of chips for the completion of each assignment. He was no longer responsible for the work the other children were assigned, since this continued to be far beyond his current skills. E gave the assignments to the teacher the prior afternoon and the teacher gave these to the child the following morning. Also, she dispensed the chips to the child when he finished a set of
assignments. The teacher corrected this seat work and handed it back to the S when she handed back the other children's work from the previous morning. This phase included 21 morning sessions, although only 9 appear on the graphs because the morning observer was able to observe the child on only 2 days a week during this phase. On session #48 the morning observer began tutoring the child in the Sullivan reading series on 3 mornings a week.

**Experimental V**

Due to the fact that the child generally exhibited negative behavior toward E and all other adults, a special contingency was added for "pleasant, happy" behavior on session #42. A large faced clock was placed on the child's desk where he could observe it. The E turned the clock on when the child was behaving pleasantly and cooperatively. She turned it off when he displayed any signs of negativism such as whining, complaining, or making nasty comments to E. For each five minutes that he accumulated on the clock E gave him a check on a ticket. These checks earned him special privileges.

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### TABLE I

**SUMMARY OF PROCEDURES**

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<tr>
<th>Sessions</th>
<th>1-9</th>
<th>10-22</th>
<th>23-30</th>
<th>31-45</th>
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<td><strong>Experimental</strong></td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Exp. I - social, candy and token reinforcement contingent upon in seat behavior, appropriate silence, attention and productivity.</td>
<td>Extinction procedures for undesirable behavior. Time out for out of seat behavior.</td>
<td>Reversal - E left the classroom</td>
<td>Exp. II - same conditions as I with a concentration on academic work plus classmates given token reinforcement for ignoring S's undesirable behavior. Not very successful as teacher unable to carry out procedure.</td>
</tr>
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<table>
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<tr>
<th>School Activities</th>
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<tr>
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(to session 36)
### TABLE I (continued)

**SUMMARY OF PROCEDURES**

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<th>Sessions</th>
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<th>41-45</th>
<th>42-45</th>
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</thead>
<tbody>
<tr>
<td><strong>Experimental Conditions</strong></td>
<td>Exp. III - S taken from the room and tutored in reading and arithmetic 2 days/week. Candy, social, token reinforcement plus contingent play periods.</td>
<td>Exp. IV - S given programmed work in the morning and token reinforcement for its completion.</td>
<td>Exp. V - special token reinforcement for pleasant cooperative behavior.</td>
</tr>
<tr>
<td><strong>School Activites</strong></td>
<td>Spelling Group Number Study Individual Number Study</td>
<td>Morning Seat Work</td>
<td>Spelling Group Number Study Individual Number Study</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION

Afternoon Data

The behavioral data collected during the afternoon are presented in Figures 1 to 8. Each day on which data were recorded was given a session number. If a class period, e.g., Spelling did not occur in a particular session no data point appears on the graph for that period.

The percent of time Ronnie spent out of his seat is shown in Fig. 1. Each graph in this figure represents the percent of this behavior for one of the afternoon class periods. During the Baseline period the S spent up to 80% of the time out of his seat during any one activity. With the introduction of reinforcement procedures in Exp. I the behavior follows the same general pattern during all activities: a slight drop in the behavior followed by a short increase; and then a dramatic decrease to a near zero rate where it remained until the implementation of Reversal conditions. The sharp increase in out of seat behavior observed during session 12 occurred at the same time as the introduction of the time out procedure for this behavior. The child spent most of sessions 13 and 14 and part of session 15 lying on the classroom floor or out in the hallway. The graph for Individual Number Study activity does not show this particular
effect as this activity did not occur on these particular days. In all periods the out of seat behavior increased significantly with the institution of the Reversal phase. During Cursive Writing, the last period of the day, the observer was unable to obtain data on the child on several days (E) of this phase because the S simply left school early and went home. This behavior pattern had never been observed previously. With the reinstitution of experimental procedures, the behavior fell immediately to a near zero percentage level where it remained until the termination of the experiment at the end of the school year.

Figure 2 indicates the percent of ten-second intervals in which S talked out of turn during four different afternoon activities. The rate was very high during baseline in all periods but showed a significant decrease under the reinforcement procedures of Exp. I. During Reversal the behavioral rate increased but failed to reach the level observed during baseline. The two days of very low rates of talking out of turn (sessions 25 and 29) on all graphs except Cursive Writing were ones in which the child indicated to the teacher that he did not feel well. Experimental II conditions resulted in a decrease in the behavior. The percentage rates of this behavior during Spelling and the Number Study periods were below ten
percent for nearly all the remaining sessions of the experiment. One of the slightly higher percents occurred on the first day of Exp. II during the Group Number Study period and the other during Spelling on a day in which the director of the program for emotionally disturbed children was present in the room to observe Ronnie. The graph on talking out of turn during Cursive Writing shows several peaks rising to about 20% during both experimental phases. The reason for these higher rates in several sessions is not clear but E noted that Cursive Writing was the last period of the day and that the child was generally very excited about getting home from school. Due to the fact that this period was terminated soon after the reintroduction of reinforcement procedures during Exp. II, E was unable to institute procedures to suppress this rate.

The third set of graphs, Fig. 3, depicts the percent of time that the S attended to his work or to the teacher during the various states of the experiment. In all periods the rate was very low during the Baseline period. During Exp. I a gradual but significant rise in the behavior was observed. The gradual rising slope of this behavior was probably to a large degree dependent upon the fact that for the first few sessions E concentrated on dispensing token reinforcement to the child for simply sitting in his seat quietly. She gradually thinned out token reinforcement
for this behavior and made reinforcement largely contingent on attentive behavior and correct academic responses. Reversal conditions resulted in a significant decrease in attentive behavior. However, it is interesting to note that on several days during the Reversal phase his attention was considerably higher than ever observed during the baseline period suggesting that perhaps some lasting effects had already been produced in the brief Exp. I phase. With the reintroduction of reinforcement procedures in Exp. II the amount of attentive behavior rose dramatically. It is of interest that the rate immediately regained its former Exp. I level in all periods and that in two periods, Group Number Study and Individual Number Study, the rate rose significantly above that observed during Exp. I.

Ronnie's productivity data for the various class periods are shown in Fig. 4. For all three activities, his rate of working was extremely low during baseline, rose sharply during Exp. I, dropped during Reversal and immediately increased with the reinstatement of reinforcement conditions during Exp. II. During Number Study and Spelling, Ronnie's rate was generally higher during Reversal than during Exp. I. During the last three sessions of Exp. II the rate in Number Study shows a distinct drop. This decrease was probably due to the fact that at this point in the workbook
the assignments suddenly became much more difficult for all the children in the classroom, including the S.

Fig. 5 indicates the rate of occurrence of negative comments about the work during Spelling and Number Study noted during three experimental conditions -- Exp. I Reversal, and Exp. II. Data do not appear for the Baseline phase since such comments were not noticed until the child was confronted with work; during Baseline Ronnie simply did not do any of his assignments, so the occasions for negative comments were not present. Over the sessions of Exp. I, a gradual decline in rate was recorded, with a zero rate being reached in both periods on the termination of the Exp. I phase. Except for one day in Spelling the rate for negative comments during Reversal was zero. Again Ronnie attempted very little work and when he could not immediately do it, he would simply quit trying. During Exp. II negative comments rose sharply for two days in Spelling and slightly on one day in Number Study. This was followed by several days when the rate was zero in spite of the fact that S was constantly being presented with work and was doing it (Fig. 4). The behavior showed marked peaks on two days in Number Study and two days in Spelling. The two high days in Spelling were days in which the director of the program, to whom S reacted very negatively, was visiting the classroom.
Handraising during the Number Study Group is presented in Fig. 6. The rate during Baseline was zero for every session. During Exp. I, this behavior occurred at low rates in three of the twelve sessions. During Exp. II the rates rose considerably over the rates observed during Exp. I. This rise is probably attributable to E's greater concentration on this particular response during Exp. II and the child's increased responsiveness to E's prompts and instruction at this stage in the experiment. However, the rate secured was not very satisfactory in comparison to the number of available opportunities for contributing to class discussion. In such a large sized group, with a child whose rate is initially so low, and when the child's academic level is below the general class level, this response seems to be one which is very difficult to condition and maintain using the procedure employed here. One problem is that once the child is called upon the probability of his being called upon again if he does raise his hand is extremely low. Also, if he is academically behind his classmates the time necessary for him to determine the correct response is much greater than the time needed by his classmates, so the answer is usually given before he has procured it and the child becomes frustrated in his attempt to keep pace with the class. Thus, from observing this child's behavior problems in such a
situation, it seems that this response would be much more easily conditioned in a small group of children who are at about the same level of achievement, with larger numbers of children being gradually faded in when the S's rate is high.

Several drug changes occurred over the course of the experiment. Two of these changes were made by the S's psychiatrist in attempts to alleviate problems with the child at home. In every figure, on the sessions marked A his Ritalin and Mellaril dosages were doubled and on the session Market B a 25 mg. daily dosage of Trofanil was added to his medication. Reversal data show that these drug changes had no gross observable effect on the kinds of behaviors that were being recorded. On the three sessions noted by a D, Ronnie's mother quit giving him Trofanil due to a previous bout of sickness. The absence of this drug seemed to have no effect on the behaviors noted in the experiment. No subjective changes in behavior were noted with either of the two above changes.

On several sessions (C) during Exp. II E had the teacher omit the afternoon dosage of Ritalin and Mellaril to try to evaluate whether the child's desirable classroom behaviors could still be maintained in the absence of these drugs and to see whether the S's drowsiness and slowness to respond were a function of the drugs. His psychiatrist suggested that these latter effects might very likely be a
function of the high drug dosages that the child was receiving. Subjectively he did seem more wide awake and quicker to respond when he did not receive his afternoon dosages but there seemed to be no change in the behavioral data that could be attributed to the omission of the drugs. The fact that the child's desirable behaviors were maintained without medication is noteworthy in light of reports by the teacher of other occasions prior to the experiment when the child had failed to receive his medication. She indicated that on those days when the child had not received his medication his objectionable behaviors had been much worse than usual and generally he was much "wilder".

Peer responses are shown in Fig. 7. These responses consisted of the peers looking at the S, talking to him or imitating him. These data have been combined for Group Number period and Spelling period. During baseline the peers responded to Ronnie at percentage levels well above zero on nearly every session. During Exp. I this responding fell to zero percent on 7 of the 11 sessions and the levels observed on the other 5 days were comparatively low. It seemed to E that this drop was largely due to the fact that Ronnie was no longer seeking the other children's attention through exhibiting wild distractive types of behavior such as barking, burping, calling out in class, and talking to other children. The children would still pay attention to him when on occasion he engaged
in such activities. The rate rose again during Reversal when he again exhibited his disruptive behavior. However, the rate never attained baseline levels. This may be partly a function of the fact that the S's talking out of turn did not reverse completely either (see Fig. 2). During Exp. II the rate decreased again to zero on 8 of the 10 sessions. Although no differences were made between the S's undesirable and desirable behavior it was subjectively noted that nearly all this attention during baseline was to undesirable behaviors exhibited by the S. E noted that during both experimental phases the S's peers often praised Ronnie for doing his work and for giving the correct answers in class. They also showed interest in how many tokens he had earned and generally responded much more favorably to him than during the Baseline period.

The teacher's responses (verbal or looking at) to Ronnie's behavior were also recorded and are illustrated in Fig. 8 for Spelling and Group Number periods combined. Although such attention was low during baseline, the response level was above zero percent on 6 of the 9 sessions. No distinction was made here either between attention to desirable behavior and that to undesirable behavior, but it was subjectively observed that the teacher's attention during this phase consisted largely of scoldings and threats consequent upon undesirable responses from S. During Exp. I when the teacher was asked to ignore Ronnie's undesirable behaviors, the teacher's attention fell
to zero percent and remained there. Reversal data indicated only a very slight rise on 2 of the 7 sessions. The fact that S's behavior deteriorated during reversal despite the fact that the teacher's behavior did not reverse suggests that her attention was not a very important factor in the maintainence of his objectionable behaviors. In Exp. II teacher attention to the S remained at zero for all sessions.

Although Ronnie's negative comments about his work showed a gradual decrease during the experimental phase (Fig. 5) his overall attitude toward the E was often very negative, particularly toward the end of Exp. I and following session #18 of Exp. II. This overall negativism displayed by the youngster consisted of some of the following types of responses: telling E that he disliked her and wished she would leave him alone; making derogatory remarks about E; turning his desk away from her or turning his back on her when she spoke to him; refusing to let E help him with his work; whining and complaining; and begrudgingly carrying out E's commands. On session #42 special contingencies were placed upon cooperative, pleasant, positive behavior. For the 7 days in which the special contingencies were in effect E noticed a remarkable change in the child's pattern of affective responses. He became a markedly different boy. He was much more cooperative, happy, pleasant, obedient and responsive. He would even approach E and show her things. However, at the same time he became surly, negative, billigerent
and resistive toward the morning observer when he read with the S in the mornings.

On the day preceding Exp. I Ronnie was tested by E on the Metropolitan Achievement Test—Primary II Battery. The S was not testable on the word knowledge, the word discrimination, the reading or spelling sections of this test as he was unable to even attempt any of these sections. His arithmetic grade equivalent 1.3 and the percentile ranking 2 percent. The S's hyperactivity and lack of cooperativeness may have contributed somewhat to this low score, in which case the score reflects both a low academic skill and the behaviors which interfere with his acquiring such skills. On the last day of Exp. V the arithmetic section of the test was readministered to the child by E. At this time his arithmetic score was 55. The grade equivalent 3.4 and the percentile ranking 85 percent. There was no problem in administering the test to the child the second time, although E did depart from standard procedures in order to have the child continue to test. She told him occasionally that he was doing well or that certain of his answers were correct, and she repeated some of the questions to the child more than once. To what extent these departures from standard procedures are responsible for the increase of 2.1 years in achievement over the 19 week interval cannot be objectively determined, but E believes that Ronnie would not have attained a higher score on the first testing if the same
departures from standard procedures have been employed at that time.

In addition to the data obtained by E, the subjective reports of other individuals in the school served as a source of evidence regarding Ronnie's overall progress. A social worker who had previously worked with the child in one of her treatment groups indicated that he was much more polite, well mannered, well behaved and generally less "wild". His teacher noted a significant change in his behavior, also. Particularly she commented that he was much more motivated to do his work, that he was much more interested in getting his work correct, that he rarely exhibited the animal behavior that he had formerly, and that he was no longer a serious problem in her classroom. The principal also was pleased with the boy's progress; he no longer had problems with Ronnie, whereas previously the boy was continually being sent to his office. Finally, the mother of one of Ronnie's classmates said that her son reported near the end of the study that many of the other boys in the room were naughtier than Ronnie. Formerly, he had been considered to be the epitome of "bad" behavior by his classmates.

Morning Generalization Data

Data were secured in the morning in order to evaluate whether or not the afternoon procedures were having any effect on the morning behaviors. A perusal of the morning results
indicates that there was very little carry over from the changes produced in the afternoon behavior.

Vocalizations out of turn (Fig. 9) were differently affected in each of the two class periods (Individual Seat Work and Sharing). In Sharing period no change was noted from one phase of the experiment to the other. This behavior in the Individual Seat work period evidenced a greater change. During Exp. I the behavior seemed to be gradually decreasing in the last few sessions. The high point on the last day of Exp. I was a day on which the child failed to receive his morning medication. Reversal indicated a very slight rise in this rate. During Exp. II the behavior dropped gradually to below the 10 percent level where it remained until the termination of the study. It is difficult to assess the effect of Exp. IV conditions as the rate was already low when the work programmed to the S's level was introduced.

Out of seat behavior (Figure 10) shows a similar discrepancy in effects. During sharing period, no change in rate was noted during Exp. I in comparison to the rates observed during Baseline. The rate of this behavior decreased during Reversal and evidence no significant increases or decreases in any other phases. Due to the number of uncontrolled variable in such a situation it seems impossible to speculate as to the possible reasons for such a change. During the Individual Seat Work activity no changes in out of seat behavior were observed until
the introduction of Exp. IV at which time the child was given work geared to his own level and given token reinforcement for completing his assignments. At this point a dramatic drop in rate was observed.

Attentive behavior (Fig. II) evidenced very little generalization effects. During Sharing a slight change was noted. At the end of Exp. I this behavior seemed to be gradually increasing. However, this new rate was maintained during Reversal, decreased with Exp. II and then showed a marked increase during the latter sessions of Exp. IV. During the Individual Seat Work activity no change in the behavioral rate was noted until the introduction of Exp. IV procedures in which the work was programmed to the child's level of achievement and the child was "paid" for completing his assignments. A marked increase in attention paralleled the implementation of this procedure.

Although there were few clear cut effects in the generalization data, a number of behaviors evidenced favorable changes in rate between the levels observed at the termination of the study and those noted in the Baseline phase. Whether these improvements can be attributed to the experimental variables is not always clear, however.

The above discussions indicate that considerable progress was made in the treatment of this disturbed child. However, the aim at the beginning of this study had been to have the child functioning well in the classroom on his own by the end of the school year (4 months - Feb. to May). It cannot be said
that this was achieved. Even if the time available for working with Ronnie had not been shortened due to the S's three weeks of illness, E would probably not have been able to succeed in the former aim. The child's behavioral disturbance was much more severe than had been originally suspected and his level of academic achievement much lower than initially recognized. Consequently, a much greater period of time was necessary to bring about the desired changes in behavior.

At the termination of the study many deficiencies in Ronnie's behavioral patterns still inhibited his adequate adjustment to the classroom. His reading was at a low first grade level, which made it impossible for him to participate in very many Grade II class sessions without a great deal of assistance. His ability to function in a group instructional period was still poor. He still did not obey the teacher very well. Also his general overall negative attitude toward adults had not been adequately modified and generalized. Thus, though it appears that considerable change was achieved, this child is simply not equipped with the responses necessary for him to function adequately within a Grade II classroom without further intensive treatment. It is presently planned to have a further extension of this program for the child in the next school year.

Despite the fact that the child is not able to function on his own in the regular classroom setting, the dramatic changes that were observed in this study as a result of the use of
reinforcement techniques have a great deal to say to the regular classroom teacher and to those individuals involved in assisting her with problem children in her classroom. The data illustrate the efficacy of reinforcement techniques in the modification of classroom behaviors. With a child as disturbed and academically retarded as Ronnie, a long term project with many modifications of procedure would be needed to bring about a lasting and desirable change in his behavior. However, this does not refute the usefulness of such procedures for the modification of problem behaviors in the classroom. Although it would be rather difficult to a teacher to devise a program for a child such as Ronnie, it seems that she might adopt modifications of these techniques and very successfully modify the behavioral patterns of most of the problem children in her classroom. Also, equipped with such techniques it seems likely that a teacher might pinpoint and modify many problem behaviors before they become as severe and well established as those exhibited by the S. With a child such as Ronnie a more extensive program based on reinforcement principles would be very feasible if implemented by some person, such as the school social worker, who could work along with the teacher. Once the program was started much of the daily work could then be carried on by a volunteer parent or other "lay" person.

As a function of conducting this experiment, a few modifications in the sequence of procedures would be recommended. Until the academic level of the child is brought into line with that of his classmates he can never function without the aid of
another individual within the regular classroom setting. Thus, it seems that the first responses that should be taught are the prerequisite behaviors to learning behaviors such as attention to the work, and the ability to sit in one's seat for a certain period of time and then the academic skills. These behaviors should be conditioned in a tutoring program outside the classroom setting. In such a program reinforcement techniques similar to those used in this study hold a great potential for motivating the child and for conditioning attention and correct responses. Once the child has learned the academic skills necessary for his participation in the regular classroom, the general classroom behaviors implicit in his adequate adjustment, such as attention to the teacher and talking out of turn, could be effectively and quickly conditioned as shown in this study. At the same time the desirable behaviors he has learned in the tutoring sessions such as in seat behavior and correct responses could be maintained.
OUT OF SEAT BEHAVIOR

FIGURE 1

SPOTTING

IND. NUMBER STUDY

GP. NUMBER STUDY

CURSIVE WRITING

SESSIONS
VOCALIZATIONS OUT OF TURN

**Figure 2**

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Exp. 1</th>
<th>Reversal</th>
<th>Exp. 2</th>
</tr>
</thead>
</table>

**Spelling**

**Ind. Number Study**

**Gp. Number Study**

**Cursive Writing**

Sessions
PRODUCTIVITY FIGURE 4

baseline exp. 1 reversal exp. 2

SPELLING

NUMBER STUDY

CURSIVE WRITING

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PEER RESPONSES  

FIGURE 7

TEACHER RESPONSES  

FIGURE 8

GP. NUMBER STUDY and SPELLING

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VOCALIZATIONS OUT OF TURN
MORNING  FIGURE 9

baseline  exp. 1  reversal  exp. 2  exp. 4

IND. SEAT WORK

SHARING

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OUT OF SEAT BEHAVIOR
MORNING  FIGURE 10

baseline  exp. 1  reversal  exp. 2  exp. 4

IND. SEAT WORK

SHARING
APPENDIX A - DEFINITIONS

A. Vocalizations out of turn: any vocalization including burps, barks, noises and talking which is neither 1) preceded by a handraise to which the teacher responds verbally nor 2) responded to by E (just during experimental phases).

B. Out of seat behavior: absence of contact between the seat and the chair to the child's desk and any part of the child's body.

C. Attention: 1) Group situations: child's eyes on teacher, teaching aid, right page in book if appropriate or on another child reciting, or on the E during the experimental phases. 2) Individual situation: child's eyes on book or paper on which he is working or on E during the experimental phases.

D. Negative Comments: comments about the work which imply something negative about the work, i.e. "I can't, I won't, I don't like or simply no."

E. Handraising: hand and arm raise so that the forearm is at least parallel with the shoulder.

F. Teacher responses: any verbal or looking at response by teacher specifically to the S's behavior.

G. Peer Responses: any verbal or looking at response by peers to the S's behavior or any imitating of his behavior by the peers.
H. Productivity:

1) Spelling: the number of letters written in the Spelling period that day by the S divided by the total number of minutes in the period that day, i.e. letters per minute.

2) Number Study: The number of numbers and letters written in either or both Number Study periods depending on whether one or both occurred on that day by the S divided by the total number of minutes in the period(s) that day, i.e. number processes per minute.

3) Cursive Writing: same as Spelling.

I. Group Situation (Spelling, Cursive Writing, and Number Study Group): a class activity in which the children and teacher interact as a group. During such periods the teacher usually engaged in the following activities: 1) verbally lecturing on some aspect of the material, 2) asking questions about the material to the children, 3) asking the children as a group to answer a question or complete an answer regarding a small segment of work usually one question which she either writes on the board or instructs the students to look at their workbook.

J. Individual Assignment Task (Individual Number Study): a situation in which the teacher assigns the children to work individually on some predetermined designated assignment.
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