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ABSTRACT

Examined with five preschool male children (1 year, 11 months to 2 years, 6 months old) was the effectiveness of a behaviorally oriented treatment program to reduce hyperactivity. Ss were enrolled in a behavior modification class which met for 2 hours per day, 3 days per week, and parents were enrolled in a parent training program. Among findings were that hyperactivity and distractibility fell from the 99th percentile to the 58th percentile, total disturbed behavior fell from the 99th percentile to the 77th percentile upon completion of the program, compliance behavior increased in all settings (home, institute, and classroom), and all parents made marked progress in their ability to use contingent positive reinforcement in control of their child's behavior. (IM)

TREATMENT OF HYPERACTIVE TWO-YEAR-OLD CHILDREN

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Although many psychiatrists are familiar with hyperactivity and related learning problems in the school age child, relatively few psychiatrists are aware that hyperactivity or uncontrollability is a major problem in children two years of age or younger. It is the purpose of this paper to describe a new behaviorally oriented treatment program for hyperactive preschool children currently being conducted at the Florida Mental Health Institute, Tampa, Florida, and through it to alert psychiatrists and others to the important role that they may play in the treatment and prevention of hyperactivity in the preschool child.

Background

Hyperactivity is reportedly the single most common behavioral disorder seen by child psychiatrists (Wender, 1973). It is estimated that 7% of school age children are hyperactive (Renshaw, 1974) and that about 200,000 children in the United States are currently receiving amphetamines to control hyperactivity (Krippner, Silverman, Cavallo, and Healy, 1973). Despite the prevalence of the disorder and the current emphasis on drug management of hyperactivity, questions have been raised regarding both the effectiveness of drug treatment and the ethics of drug treatment for young children (Krippner, et al, 1973; Walker, 1974; Offir, 1974). As a consequence, behavioral-educational alternatives to drug control have begun to be investigated and some have proven effective with the school age child (Ayllon, Layman, and Kandel, 1975).

Since an early intervention approach has proven effective with other behavioral disorders such as functional mental retardation (Drash and Leibowitz, 1973; Heber and Garber, 1970), it would appear that early intervention would be effective in the treatment and prevention of hyperactivity.

The present study is an investigation of this hypothesis.

Method

Subjects and Setting.

The Hyperactivity Clinic is a training and research project of the Children's Services, Florida Mental Health Institute. It was developed in conjunction with a group of Tampa pediatricians and the Department of Special Education, University of South Florida. The subjects of this study were five hyperactive children, all males, ranging in age at admission from one year, eleven months to two years, six months. All patients were identified and referred by local pediatricians. Three of the five children were receiving medication to control hyperactivity. Initial behavior of the children is described below. Subject data is presented in Table 1.

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Insert Table 1 about here.

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S1: John (C.A. 2 1/2 yrs.). This child was uncontrollable by either parent. He did not follow instructions, engaged in screaming temper tantrums which lasted for at least a half hour, was cruel to animals, threw toys about the room and at his parents, ran away if left in the yard alone, used very little speech, and was so disruptive and uncontrollable that his parents had not taken him to eat in public in more than a year.

S2. Chris (C.A. 1 yr., 11 mo.). Chris was almost totally non-compliant for either parent. His disruptive behavior included biting, fighting, climbing onto high and dangerous objects, severe temper tantrums, and refusal to go to bed. He had broken two of his mother's front teeth by butting her with his head, and his speech was markedly delayed.

S3. Steve (C.A. 2 1/2 yrs.). Whenever Steve's wishes were thwarted, he became uncontrollable and engaged in severe temper tantrums. Other disruptive behavior included hitting his mother and his sibling, biting, throwing objects and kicking. When seen for evaluation at a mental health clinic he was judged to be too hyperactive to be evaluated.

S4. Ryan (C.A. 2 yr., 4 mo.). Ryan was "always on the go and into things." He was described as strong-willed, excessively demanding and having a sharp temper. His typical behaviors included turning on the iron on the floor, burning himself on the stove, climbing on top of an eight-foot bookcase, and covering the bathroom with soap powder. He slept only four or five hours per night and was generally non-compliant with both parents.

S5. Jason (C.A. 2 yr., 5 mo.). Jason was described as "always into everything." He was almost totally non-compliant with his mother and only slightly more controllable by his father. His disruptive behavior included temper tantrums, hitting, biting, climbing, and burning himself several times on a stove. He had run away from home four times and had been picked up three times by the police who had threatened to put him in a receiving home.

Behavioral Analysis of Hyperactivity and Strategy for Treatment.

An operational analysis of the behavior of the hyperactive child indicates that the problem is not one of hyperactivity per se, but rather one of uncontrollability. That is, the child will not comply either when asked to terminate an undesirable behavior or when asked to engage in a desirable behavior. Hyperactivity then, operationally defined, means the child is non-compliant or more specifically, not under verbal instructional control.

The approach to treatment thus is to design a program which will (1) bring the child under instructional control, and (2) teach the parents effective behavioral techniques for maintaining behavioral growth of the child and for teaching the child new, socially acceptable patterns of behavior.

Procedure

All children were enrolled in the Hyperactivity Class. The class, which met two hours per day, three days per week, was taught by a graduate student in special education who had been given special training in the use of behavior modification procedures with young children. The parents were enrolled in a parent training program, taught by the author, which met for one to two hours each week.

Classroom Goals. The overall goal of the various classroom activities was to bring the children under relatively close instructional control and to reduce the frequency of negativistic, oppositional, and non-compliant behaviors. Other goals were to increase the frequency of (1) "on-task behavior" and attention span, (2) completion of tasks, (3) ability to terminate a reinforcing activity under instructional control. Behaviors to be decreased included (1) "off-task behavior," (2) aggressive behavior (verbal and physical), (3) temper tantrums, and (4) self-abusive behavior and other dangerous behaviors.

Classroom Activities. The classroom activities were selected and scheduled to present maximum opportunity for oppositional behaviors to occur and consequently maximum opportunity for the teacher to establish verbal instructional control. The two-hour classroom period was divided into 10 segments of 10 to 20 minute behavioral sequences which included both group and individual activities.

Reinforcement Procedures for Establishing Behavior Control in the Classroom.

Previously established behavior modification procedures for obtaining behavior control in children which have been outlined elsewhere were followed (Ferster and Perrott, 1968; Sulzer and Mayer, 1972; Drash, 1974). Specific procedures are commented on below.

Positive Reinforcement. The major behavior control procedure used in the program was positive reinforcement. Tangible food reinforcers were used liberally during the first four weeks of the program and were then gradually faded to a more intermittant schedule and then finally dispensed primarily during "juice time." The Premack Principle (use of a high rate activity to reinforce a low rate activity) was also heavily relied upon. Food reinforcers were faded out as rapidly as possible and were always paired with social reinforcers in the form of verbal praise, a smile, a hug, a pat on the head, or a tickle.

Aversive Contingencies. The only aversive consequence used in the program was a time-out procedure, and it was used very sparingly. A small time-out box (1'7" x 2'3" x 3'8") enclosed on all four sides and at the bottom but open at the top was located in one corner of the room.

Parent Training Procedures.

The major objective of the parent training program was to teach the parents specific behavior modification techniques which they could use with their own child in the home setting and elsewhere. In most cases the mother was the primary parent involved in training. Sessions were conducted once per week and lasted from one to two hours. Each session consisted of an individual training period during which one parent and her child were worked

with individually by the author. The other parents observed the individual training sessions and discussion periods were held periodically with the entire group as a supplement to the individual training. Parents were encouraged to observe the children's classroom sessions through a one-way vision mirror and most did so regularly.

Each individual training session was usually divided into the following four parts: (1) The parent was given a series of behaviors that she attempted to have the child engage in using her own procedures with no help from the therapist. (2) The therapist working with the child demonstrated or modeled for the parent the correct procedures. (3) The parent attempted to have the child engage in the behaviors while being given help and supervision by the therapist. (4) The parent attempted to have the child engage in the behaviors without help from the therapist.

In addition to the training sessions, parents were given individual therapeutic consultation regarding specific problems they might wish to discuss in private.

Parent's rating of the child's hyperactivity and emotional disturbance prior to admission and after intervention was obtained through administration of the Behar Preschool Behavior Questionnaire. The Behar is a 30 item behavior questionnaire which contains four scales: Hostile-Aggressive Behavior, Anxious Behavior and Hyperactive and Distractible Behavior, and a composite Total Disturbed Behavior scale. The extent of the child's compliance or non-compliance with parental and teacher's requests was assessed by direct observation at home and in the classroom.

Results

As indicated in Table 2, hyperactivity and distractibility fell from

the 99th percentile to the 58th percentile as measured by the Behar. Total disturbed behavior fell from the 99th percentile at the beginning of treatment to the 77th percentile upon completion of the program.

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Insert Table 2 about here.

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Classroom Behavior. Compliance behavior in the program may be divided into two general categories: (1) Compliance by participating in the various major classroom activities scheduled throughout the morning, (2) Compliance with the numerous instructions that were given throughout the course of the morning, such as replacing a toy on the shelf or coloring a specific picture. Under Category 1, participation in the various major activities of the program, compliance behavior was above 90%, that is, all children moved from one activity to another under instructional control without oppositional behavior. Under Category 2, compliance with the various instructions, four of the five children were at or above the 80% compliance level, and two children on whom specific observations were made were at the 94% compliance level as shown in Table 3.

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Insert Table 3 about here.

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Observed Parent Behavior During Training Sessions. As shown in Table 3, all parents made marked progress in their ability to use contingent positive reinforcement in control of their child's behavior. In the individual training sessions parents moved from an initial compliance level by the child of about 20% to 30% to the present level of about 70% to 80% compliance with instructions. As a point of reference, five children awaiting treatment had

a mean compliance level of 38%.

During the initial individual training sessions all parents demonstrated extreme difficulty in obtaining their child's compliance with their instructions. The parents of Subject 1, Subject 2, and Subject 5 obtained almost no compliance during the first few sessions and attempts to obtain compliance usually resulted in temper tantrums. None of the parents knew how to use contingent positive reinforcement and their attempts to gain compliance relied primarily upon force or threat of punishment.

All parents now demonstrate an ability to obtain compliance through the use of contingent positive reinforcement. They also demonstrate a knowledge of the use of time-out when necessary, but do not use it as a primary technique of control.

Behavior of Children in the Home Setting. The major target behavior, improvement of the child's behavior in the home setting, has shown definite improvement. As shown in Table 3, the mean compliance level in the home is 65%. Subject 1 is now under good instructional control by both parents. He rarely has temper tantrums and can now for the first time in more than a year be taken out to eat in public. Subject 2 is now under much better instructional control at home, his temper tantrums are almost completely controlled, and his head butting is no longer a problem. Subject 3 is now no longer considered a control problem by his mother. His behavior is well controlled and he rarely has a temper tantrum. Subject 4 behaves quite well for his aunt who has attended the training program and has primary responsibility for caring for the child. He continues to present control problems for his mother and father, both of whom work and have not been able to participate in parent training. Subject 5, who initially presented major problems by running out of the yard and away from home, no longer

presents such problems.

Discussion

This program demonstrates clearly that a behaviorally oriented treatment program can produce rapid and in some cases dramatic improvement in the behavior of the hyperactive child. All five children in this study were considered severe behavior problems both by their parents and by the referring pediatricians. Within a period of five to twelve weeks the major disruptive aspects of the behavior of all five children had been brought under control. It is thus clear that the psychiatrist who is equipped with a knowledge of behavior modification procedures has a powerful additional tool which can assist him in the design of treatment programs for remediation of hyperactivity in the preschool child. Several issues arise in working with the hyperactive child and his family which may be considered further.

Reconceptualization of Hyperactivity. An important factor contributing to the success of this program has been to reconceptualize hyperactivity in terms of operationally definable behavior rather than as a diagnostic syndrome or entity. When this is done it becomes obvious that the problem is uncontrollability or non-compliance rather than hyperactivity. These children were not necessarily more active than other children their age. The problem lay in the fact that they were active at the wrong time or in the wrong place, and that they would not "cease and desist" when requested to do so. When hyperactivity is so conceptualized, the problem of how to treat or remediate hyperactivity can be rephrased as a much more manageable problem; namely, "how to teach parents to teach compliance behavior to their children."

Etiology. When hyperactivity is dealt with primarily as a problem in behavior control, the issue of whether the child has "minimal brain dysfunction" becomes, for the most part, irrelevant. For parents who are concerned with this issue, two general comments have proven useful. First, regardless of etiology, the major concern is to provide parents with those skills and techniques which will help them to remediate the problem that now exists. Second, these techniques are recommended for and have proven effective even with children who have rather extensive brain damage.

Use of Medication. Three of the five children in this program were receiving either Mellaril, Benadryl, or a combination of both prior to entering the program and continued to receive it after being enrolled in the program. Since little or no improvement occurred when the children were on medication alone, it would appear that some form of behavior therapy was definitely indicated. Would the behavioral improvements obtained in this program remain if the children were taken off medication? Our results with the two children not on medication, as well as other studies indicate that the probable answer to this question is, "Yes" (Ayllon, Layman, and Kandel, 1975). The question obviously should be investigated further, but if the major effect of medication is to provide relief for parents rather than training for the child, alternative modes of treatment should certainly be given careful consideration.

Importance of Early Intervention. The extreme importance of intervening as soon as possible with the hyperactive child cannot be overemphasized. The basic behavioral pattern of uncontrollability, if left unattended until school age, can become so well established that it can create almost insurmountable problems. In its extreme form, the child may

become identified as a severely emotionally disturbed child. In other cases the result may be marked language delay, short attention span and major learning problems. The efficacy of early intervention has been demonstrated with other disorders such as mental retardation and language delay (Drash and Leibowitz, 1973). It appears essential that we now begin to think in terms of early intervention and prevention of hyperactivity rather than delaying treatment until the problem becomes so severe and so obvious that even the most sophisticated treatment programs can be expected to produce only minimal results.

Stress on an Educational Model. While this program retains some aspects of a traditional therapy model, the program would more properly be characterized as an educational or teaching program in which the stress is upon teaching new skills to both parents and children. In the opinion of the author, this is the most productive direction for behavioral treatment programs to move. Carrying this logic one step further, it would appear that parent training programs such as this one should eventually become an integral part of our public education system.

The Parent as Primary Therapist. The long range implication of this and other similar programs is that the parent should more and more be viewed as the primary therapist for the child and the primary line of defense in the prevention and treatment of developmental disorders. For too long the parent has been at the periphery of the treatment process and at the mercy of often conflicting "expert" advice and opinion. Given appropriate training, parents themselves can become one of the "experts" and are, in fact, potentially the most formidable aspect of a comprehensive prevention and early intervention program. Psychiatrists are in an ideal

position to begin integrating parents into early intervention programs and thus begin a much needed demythologizing of the entire treatment process.

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TABLE 1

SUBJECT DATA

	INITIALS	SEX	RECEIVING PSYCHOTROPIC MEDICATION	MOS. IN PROGRAM	AGE AT ADM.	IQ
1.	J.B.	M	No	9	2.4	116
2.	C. McD.	M	Yes	9	1.9	97
3.	S. McW.	M	Yes	9	2.6	120
4.	R.M.	M	No	7	2.3	104
5.	J.R.	M	Yes	5	2.4	109
			MEAN:	7.8	2.3	109.2

TABLE 2

PRE AND POST PERCENTILE RANKS ON THE
BEHAR PRESCHOOL BEHAVIOR QUESTIONNAIRE

	TOTAL DISTB. BEH.		SCALE 1 HOSTILE AGG.		SCALE 2 ANXIOUS		SCALE 3 H.A. & DISTR.	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
Mean Percentile Rank	99	77	95	85	94	67	99	58

TABLE 3

CHILDREN'S COMPLIANCE BEHAVIOR IN HOME, INSTITUTE AND CLASSROOM SETTING COMPARED

SETTING	N	PER CENT COMPLIANCE
Home (with Parent)	5	65.0
Institute (with Parent)	4	77.5
Classroom (with Teacher)	2	94.5
Children without Training	5	38.6

TABLE 5

COMPARISON OF TRAINED PARENTS AND EXPERIENCED THERAPISTS ON TEST OF KNOWLEDGE OF TECHNIQUES OF BEHAVIOR MANAGEMENT

GROUP	N	MEAN SCORE	MEAN PER CENT CORRECT
Parents	5	30.6/41	75
Child Behavior Specialists	5	34/41	83

TABLE 6

COMPARISON OF TRAINED PARENTS, EXPERIENCED THERAPISTS AND UNTRAINED PARENTS IN TECHNIQUES OF BEHAVIOR CONTROL

PARENT CLASSIFICATION	N	PER CENT COMPLIANCE	% Rf	% S[a]	PER CENT PHYS. PROMPT	PER CENT PREMACK	PER CENT ACT. OUT
Trained Parents	4	77.5	68	1	.8	0	0
Experienced Therapists	5	81.6	76	.2	3.4	.4	1.8
Untrained Parents	2	35.0	54	4	19.5	.5	10.5