

Stimulant Medication and Parent Training Therapies for Attention Deficit-Hyperactivity Disorder

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Abstract:

The present article provides a brief overview of the clinical use of two of the most commonly used and effective therapies for Attention Deficit-Hyperactivity Disorder (ADHD) in children: stimulant medication treatment and training parents in child behavior management skills. The clinical issues involved in the use of each treatment, as well as their limitations, are reviewed, along with evidence for their efficacy. It is concluded that ADHD is a developmental disorder of attention, impulse control, and regulation of activity level that requires multiple treatment methods, which must be applied over long time intervals if they are to produce an impact on the outcome of children with ADHD.

Article:

Attention deficit-hyperactivity disorder has been characterized as comprising developmentally inappropriate levels of sustained attention and impulse control, and poor regulation of activity level to situational demands (American Psychiatric Association, 1987). Others have also included deficits in rule-governed behavior, or the ability of language and rules to regulate social conduct, as another aspect of this disorder (Barkley, 1981). The disorder is believed to arise in early childhood, with a mean age of onset of 4 years (Barkley, Fischer, Newby, & Breen, 1988), and is viewed as being relatively chronic throughout childhood and adolescence (Weiss & Hechtman, 1986). The disorder is frequently associated with other co-morbid conditions, such as learning disabilities, oppositional-defiant disorder, conduct disorder, academic underachievement, and social skill deficits (Barkley, 1989).

The large number of symptoms associated with ADHD, as well as the numerous other diagnoses and deficits seen to coexist with it, requires that treatment be multidisciplinary as well as multimodal in nature. A variety of treatments has been attempted with ADHD over the past century—far too numerous to review here. However, those treatments with some proven effectiveness at symptom reduction include (a) psychopharmacological therapy, (b) direct application of behavior therapy techniques in the classroom, (c) parent training in behavior management skills, (d) cognitive-behavioral training, and (e) an assorted combination of these treatments. No treatment has yet proven to cure this condition—all provide purely symptomatic relief. Moreover, no treatment has produced any enduring effects with these children once the treatment is withdrawn (Barkley, 1989). As a result, many professionals are now moving to the view that ADHD is a developmental disability, requiring longterm symptomatic treatment.

In this article we review the two most commonly used and effective therapies for the management of ADHD in children: (a) stimulant medication therapy and (b) training parents in behavior management skills. In each case, we present clinically useful information on the nature of these two treatments as they are used at the ADHD Clinic of our medical center. Space precludes an in-depth review of the literature related to these two treatments, but references to more detailed reviews are cited throughout for those wishing greater coverage of these topics.

Both treatments have as their goal to create a better fit between the child with ADHD and the demands made on that child by the social environment, especially at home and school. In the case of stimulant medication, this is achieved by altering those deficits experienced by the child in the domains of inattention, impulsivity, and overactivity through manipulation of the neurological substrates believed to mediate these neuropsychological functions. With regard to parent training, the goal of a "best fit" is achieved through restructuring the types of demands that parents make on their children with ADHD so as to be less taxing of the children's behavioral handicaps, and through rearranging environmental contingencies known to affect children's motivation to increase work performance, rule-governed behavior, and compliance.

Interestingly, current theories of ADHD that suggest it may be a biologically based deficiency in sensitivity to reinforcement or other motivational factors (Barkley, 1990; Haenlein & Caul, 1987) provide a coherent rationale for the use of both treatments. These theories state that ADHD is not so much a deficiency in attention as in the child's sensitivity to environmental reinforcers that typically motivate children to perform work, to inhibit behavior, and to sustain their responses to assigned tasks. The stimulant medications, via their action on the limbic system, striatum, and orbital cortex, act to lower the threshold of sensitivity to reinforcement, thereby prolonging responding under conditions that previously would have led to behavioral extinction (Haenlein & Caul, 1987; Lou, Henriksen, & Bruhn, 1984; Lou, Henriksen, Bruhn, Borner, & Nielsen, 1989). In short, by manipulating the behavioral reward system, these medications make the children with ADHD more sensitive to reinforcers available in the environment and thereby increase their attention span or persistence of responding (effort) to environmental events. Parent training, on the other hand, addresses this hypothesized deficiency in sensitivity to reward by altering the environmental contingencies such that the magnitude of reinforcement available for appropriate behavior is dramatically increased for children with ADHD. Combined, both treatments provide a powerful tool for managing the behavioral deficiencies of children with ADHD. Clinicians, therefore, require an understanding of both approaches.

Brand name ^a	Tablet sizes	Dose range ^b
Ritalin (methylphenidate)	5 mg	2.5 mg to 25 mg
	10 mg	
	20 mg	
	SR 20 mg ^c	
Dexedrine (d-amphetamine)	5 mg (tablet and spansule)	2.5 mg to 20 mg
	10 mg (spansule)	
	15 mg (spansule)	
	5 mg/5 ml (elixir)	
Cylert ^d (pemoline)	18.75 mg	18.75 mg to 112.5 mg
	37.5 mg	
	75 mg	

^aGeneric name in parentheses. ^bDose range for each administration is provided. ^cSustained-release Ritalin is administered once per day. ^dCylert is administered once per day.

PHARMACOTHERAPY

Psychostimulant medications (e.g., methylphenidate) have been the most extensively studied intervention for ADHD and related disruptive behavior disorders. In fact, over 70% of children with ADHD taking these medications exhibit behavioral, academic, and attentional improvements, according to parent/teacher ratings, laboratory task performance, and/or direct observations (Barkley, 1977). Stimulants are not alone in bringing about a favorable treatment response; several investigations have demonstrated the efficacy of antidepressant medications with this population (see Pliszka, 1987, for a review). The present review will focus exclusively on the use of psychostimulants, however, as they are associated with a higher probability of success than antidepressants and have a more extensive research literature documenting their effectiveness.

The stimulant medications most commonly employed in the treatment of ADHD are displayed in Table 1, along with their generic names, tablet sizes, and typical dose ranges. Traditionally, recommended dosages for stimulant medications have been based on a child's body weight, using a milligram-per-kilogram formula (American Academy of Pediatrics, 1987). Alternatively, recent dose-response studies indicate that the behavioral effects of methylphenidate (MPH) are highly idiosyncratic and are not moderated by differences in body weight (Rapport, DuPaul, & Kelly, 1989; Rapport et al., 1987). Thus, determining dosage on a milligram-per-kilogram basis may result in under- or overdosing light and heavy children, respectively. For this reason, Table 1 presents recommended dosages in terms of fixed-doses, as they are typically prescribed.

Effects of Stimulant Medication

The psychostimulants listed in Table 1 enhance the action of certain neurotransmitters (i.e., catecholamines) by inducing their release from the presynaptic neuron, blocking their reuptake, and/or inhibiting the actions of monoamine oxidase (Donnelly & Rapport, 1985). Through this action at the neurochemical level, psychostimulants appear to stimulate not only the reticular activating system but also the limbic system, striatum, and other related regions of the brain (i.e., orbital-frontal lobes) that are presumed to control attention, arousal, and inhibitory processes (Barkley, 1977; Evans, Guiltieri, & Hicks, 1986). Further, there is some evidence to suggest that the behavioral effects (as outlined below) of stimulants may be caused by their lowering of the central nervous system (CNS) threshold for reinforcement and prolonging the

sensitivity to reinforcement beyond when satiation or habituation would typically occur (see Haenlein & Caul, 1987; Stein, 1964). Peak blood levels are obtained between 1 and 2.5 hours postingestion (Shaywitz et al., 1982), with optimal therapeutic effects occurring within 2 to 4 hours and lasting up to 7 hours. These properties vary somewhat across individuals and within children over time.

A plethora of empirical evidence indicates that psychostimulant medications significantly enhance certain behavioral, cognitive, and academic processes among children with ADHD. For example, MPH has been found to improve the performance of children with ADHD on laboratory tests of sustained attention (Barkley et al., 1988; Rapport et al., 1987), impulsive-reflective responding (Brown & Sleator, 1979; Rapport et al., 1988), short-term recall (Barkley et al., 1988; Rapport, Stoner, DuPaul, Birmingham, & Tucker, 1985), and associative learning (Vyse & Rapport, 1987). Attesting to the external validity of these findings, MPH-induced enhancements of children's on-task and academic accuracy rates in the classroom have also been obtained (Douglas, Barr, O'Neill, & Britton, 1986; Pelham, Bender, Caddell, Booth, & Moorner, 1985; Rapport et al., 1987; Rapport et al., 1988), along with concomitant reductions in disruptive, out-of-seat behavior (Werry & Conners, 1979). Further behavioral effects are found with respect to increased compliance, independent play, and responsiveness to social interactions with parents, teachers, and peers (Barkley, Karlsson, Strzelecki, & Murphy, 1984; Cunningham, Siegel, & Offord, 1985). The amount of commands, criticism, punishment, and censure directed at the children by adults is often reduced as well. It is not clear, however, whether the child's acceptance by his or her peers is enhanced by these behavioral changes.

Despite clinical lore to the contrary, ADHD does not typically remit in adolescence or adulthood in the majority of cases (Barkley, Fischer, Edelbrock, & Smallish, 1990; Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Weiss & Hechtman, 1986). Recent investigations have demonstrated the clinical efficacy of stimulant medications with teenagers (e.g., Klorman, Coons, & Borgstedt, 1987) and adults (Wender, 1987) who have residual ADHD symptomatology. Thus, this treatment may be utilized on a chronic basis, as needed, throughout the early years of an individual with ADHD.

Side Effects

Despite the recent controversy in the media regarding severe side effects associated with psychostimulants (e.g., Bacon, 1988), side effects are typically quite mild relative to other classes of medications. The most frequent side effects are decreased appetite and insomnia, with a minority of cases reporting somatic symptoms (e.g., headaches or stomachaches), increased tension, growth inhibition, and increases in heart rate or blood pressure. In general, the frequency and severity of treatment-emergent effects are apparently dose-related and may diminish with reductions in dosage and/or passage of time (Barkley, 1981). In very rare cases, symptoms of Tourette's Disorder may be evident following treatment with stimulant medication (Golden, 1974; Lowe, Cohen, Detlor, Kremenitzer, & Shaywitz, 1982). Although the research evidence documenting the validity of this latter side effect is equivocal, caution must be applied when considering the use of these drugs among patients with a personal or family history of motor and/or vocal tics (Comings & Comings, 1984; Golden, 1982).

An additional complaint that is occasionally associated with MPH is a marked deterioration in behavior (e.g., increased irritability and noncompliance), occurring in the late afternoon or early evening, following daytime medication administration. This "rebound effect," as it is sometimes referred to, may involve a worsening of behavioral control beyond levels observed when the child is not taking MPH. While this phenomenon has not been closely studied, a recent investigation found that only about one third of a large sample of boys treated with several doses of MPH exhibited behavioral rebound effects, but not to the extent that a modification of their medication status was necessary (Johnston, Pelham, Hoza, & Sturges, 1988). Nevertheless, there are case reports of children experiencing emotional sensitivity, weepiness, and irritability either during the course of active medication or during this "washout" period, which needs to be kept in mind in the clinical use of these medications (Barkley, 1977).

Assessment of Medication Effects

Although stimulant medications have been found to significantly enhance behavioral and academic functioning among groups of children with ADHD, their effects on the behavior of individual children are idiosyncratic and dependent upon several factors, including (a) the specific task or activity under investigation and (b) the dosage (Rapport et al., 1987; Rapport et al., 1988; Sprague & Sleator, 1977). Thus, treatment evaluation must involve the use of multiple measures collected across several doses of medication.

Under ideal circumstances, assessment of medication response would take place in the context of a double-blind, placebo- controlled trial (see Barkley et al., 1988, or Rapport, 1987, for a more detailed discussion). For example, Rapport et al. (1987) evaluated the individual responses of 42 children with ADHD to several doses (i.e., placebo, 5 mg, 10 mg, 15 mg, and 20 mg) of MPH, which were administered in random sequence. Multiple measures of attention were taken across clinic and classroom settings, including performance on a continuous performance test (Rosvold, Mirsky, Sarason, Bransome, & Beck, 1956), teacher ratings on the Attention factor of the ADD-H Comprehensive Teacher Rating Scale (ACTeRS) (Ullmann, Sleator, & Sprague, 1984), direct observations of classroom on-task behavior, and efficiency on written academic work (i.e., percentage of work completed correctly or academic efficiency score).

Consistent with the findings of prior investigations, linear dose-response effects on most measures were obtained at the group level, with optimal functioning occurring at the highest dose. Alternatively, dose-response effects at the individual level were characterized by significant intersubject variability (see Figure 1). The MPH response of individual children could be categorized as (a) linear (S-1 and S-2), (b) subject to a threshold effect at a moderate (S-3) or high (S-4) dose, (c) representing an inverted U-shape function (S-5), or (d) inconsistent across doses (S-6). These patterns were found to be independent of a child's body weight and to vary somewhat across specific measures.

In addition to clinic- and classroom- based measures of attention, the research literature has demonstrated the dose- response sensitivity of parent/teacher ratings of self-control and impulsivity, direct measures of associative learning (Vyse & Rapport, 1987) and impulsivity (Brown & Sleator, 1979), and ratings of the frequency and severity of side effects (Barkley et al., 1988). It is especially important to obtain ratings of side effects from multiple sources (e.g., parent, teacher, child) during both medication and nonmedication conditions as complaints of

apparent "side effects" may occur during placebo conditions as well (Barkley, McMurray, Edelbrock, & Robbins, 1989).

Limitations of Pharmacotherapy

There are several factors that limit the utility and/or efficacy of the treatment of ADHD with stimulant medication. First, it must be closely prescribed, titrated, monitored, and withdrawn under a physician's care. Thus, in rural areas where such medical care is scarce, pharmacotherapy may be unavailable. Second, the results of several long-term follow-up studies investigating stimulant medication effects have indicated minimal improvements beyond those obtained at the onset of treatment (e.g., Hechtman, Weiss, & Perlman, 1984). However, these results may be due to methodological shortcomings (e.g., poor outcome measures, inconsistent dosage titration procedures), low compliance with medication administration (e.g., Brown, Borden, Wynne, Spunt, & Clingerman, 1987; Firestone, 1982), and/or lack of effects on behavior in situations that occur when the drug is inactive. Finally, psychostimulants may be ineffective or inappropriate in treating certain subgroups of children with ADHD (e.g., those with anxiety symptoms), some behavioral classes (e.g., aggression), or behavior in certain settings.

Summary

Psychostimulant treatment of children with ADHD has been reliably associated

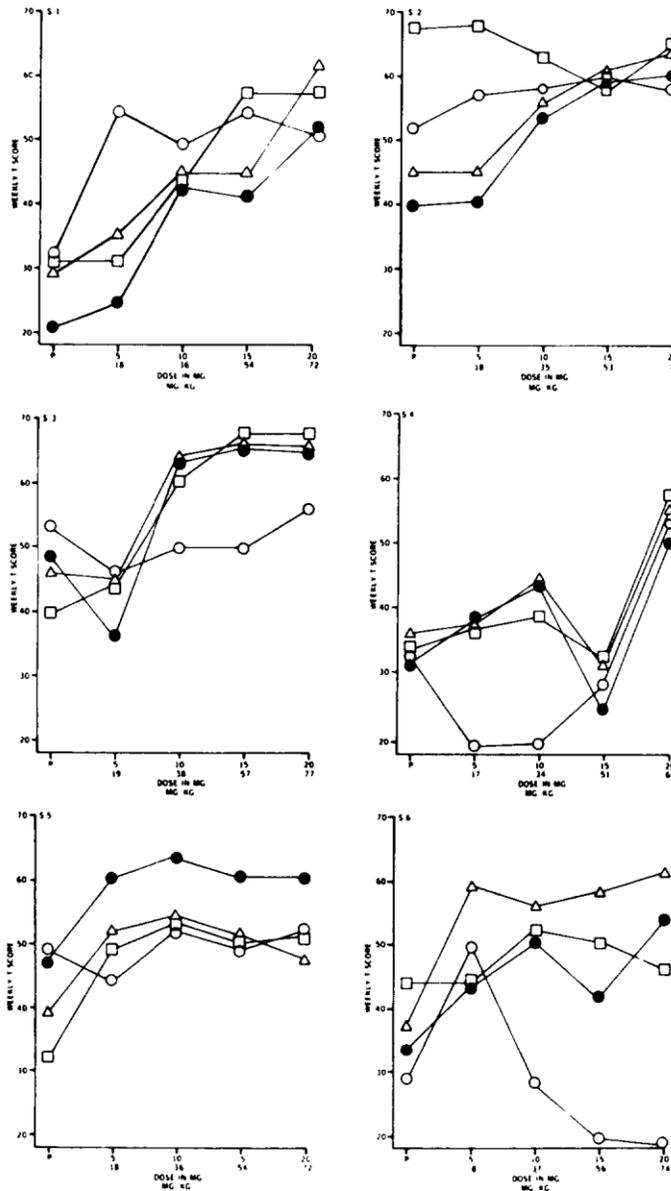


Figure 1. Dose-response curves of four dependent measures: Percentage on task (closed circle), Academic Efficiency score (triangle), Attention scale rating on the ADD-H Comprehensive Teacher Rating Scale (square), and omission errors on a continuous performance test (open circle) for a representative subgroup of six children. Standard (*T*) scores were derived based on the performance of the entire sample ($N=42$), aggregated across all conditions (excluding baseline). Improvement on all measures is indicated by upward movement on the ordinate.

Note. From "Attention Deficit Disorder and Methylphenidate: Group and Single-Subject Analyses of Dose Effects on Attention in Clinic and Classroom Settings" by M.D. Rapport, J.T. Jones, G.J. DuPaul, K.L., Kelly, M.J. Gardner, S.B. Tucker, and M.S. Shea, 1987, *Journal of Clinical Child Psychology*, 16, pp. 329-338. Copyright 1987 by Lawrence Erlbaum Associates. Reprinted with permission.

with significant short-term enhancement of sustained attention, self-control, interpersonal behavior, and academic performance. The dose-response effects of this class of medication are subject to individual differences and are task-specific. This indicates the need for a multimethod assessment protocol, wherein information regarding a child's response is gathered across settings,

doses, and behavioral domains. Treatment emergent effects should be monitored during both medication and nonmedication conditions. An exclusive reliance upon pharmacotherapy as a treatment for ADHD is not recommended, given the complex nature of the disorder and the limited long-term efficacy of stimulant medications. Rather, psychostimulants should be a critical component of a multimodal intervention program that includes parent training, educational modifications, and classroom contingency management procedures.

PARENT TRAINING IN CHILD BEHAVIOR MANAGEMENT SKILLS

Recent research findings have led many scientists and practitioners to the conclusion that ADHD is in large part a biologically based temperamental style (Anastopoulos & Barkley, 1988; Wender, 1987) that predisposes youngsters to be inattentive, impulsive, and physically restless, as well as deficient in their capacity for rule-governed behavior (Barkley, 1985). Implicit in this conceptualization is the need to restructure environmental demands and contingencies so as to create a "prosthetic" home and school environment that allows the youngster with ADHD to develop compensatory skills for coping with this chronic and pervasive behavioral disability. This is by no means an easy task, nor is it one that lends itself to singular treatment approaches. Instead, clinical management of ADHD typically requires multimodal therapeutic intervention.

Stimulant medication therapy, described above, is one of the more commonly employed treatments in the management of ADHD. So, too, are various modifications within the school setting, such as contingency management programming in the classroom, use of daily report card systems, and/or special education services. Home-based behavioral intervention is often another major component of the overall treatment package.

Many variations of these home-based behavioral interventions have been reported in the literature (Barkley, 1981; Dubey, O'Leary, & Kaufman, 1983; Pisterman, McGrath, Firestone, & Goodman, 1987). At the University of Massachusetts Medical Center, the ADHD Clinic staff routinely employs a variation of the comprehensive parent training program developed by Barkley (1981, 1987). Although it bears a resemblance to previously reported therapeutic regimens (Forehand & McMahon, 1981; Hanf, 1969; Patterson, 1975), this particular parent training program is unique in the way it is tailored to meet the special needs of children with ADHD and their families. A brief description of this program is provided in the sections that follow.

Historical Background

The training program for parents of children with ADHD described by Barkley (1981, 1987) stems from several theoretical and empirical roots. Among these are Hanf's (1969) two-stage program for childhood noncompliance, which Forehand and others have repeatedly employed successfully with youngsters manifesting oppositional tendencies, aggressiveness, and conduct problems (Forehand & McMahon, 1981; Wells & Forehand, 1985). This program trains parents in the skills needed to use differential attention to appropriate versus inappropriate behavior, and to use a time-out procedure. The influence of Bell's theoretical notions of bidirectional parent-child interactions (Bell & Harper, 1977) is also apparent. In a similar context, Patterson's theoretical views on coercive parent-child interactions (Patterson, 1976) are contained in the Barkley program.

Finally, what makes the ADHD parent training program most distinct is the degree to which it is designed around theoretically and empirically derived notions of ADHD. As noted above, an especially prominent premise, interwoven throughout the program, is that ADHD is in most cases a biologically based temperamental style that predisposes youngsters to be inattentive, impulsive, and physically restless, as well as deficient in their capacity for rule-governed behavior. Thus, the main therapeutic objective for children with ADHD and their parents is not to cure or eliminate their ADHD problem, but to learn methods of coping with and compensating for this ongoing learning and behavioral disability.

The ADHD Parent Training Program

General Considerations. Generally speaking, parent training services are delivered over the course of 6 to 12 therapy sessions in either an individual family or multifamily group format. In the ADHD Clinic, most parent training is conducted in a multifamily group format over 9 to 10 sessions. Prior to discussing the specific steps and techniques of this training program, it is first necessary to consider how families are selected for participation.

An important initial screening condition is the age of the identified child. In most cases identified children must be between 2 and 11 years of age in order for their parents to be considered for enrollment in the program.

Accurate diagnostic assessment of the identified youngster and his or her family also comes into play. In the ADHD Clinic, identified children and their families initially undergo a multimethod diagnostic evaluation (Barkley, 1987). A clear-cut diagnosis of ADHD, with or without related behavioral disturbances such as Oppositional-Defiant Disorder, does not automatically lead to the initiation of parent training services, however. Other conditions, such as severe language delays, mental delays, or depression with suicidal ideation, must be ruled out. Provided that there are no other major medical or psychosocial complications in the family, referral is made to the parent training program. Should certain psychosocial problems, such as serious marital strain, preclude parental participation, referrals are directed instead to appropriate mental health professionals to begin addressing such complications. As these problems come under better control, it then becomes possible for the parents to participate in the parent training program.

The severity of the child's behavioral difficulties can also affect when the parent training services will be delivered. In cases where the ADHD is extremely severe, it is often initially necessary to consider placing the youngster on a stimulant medication, such as Ritalin. To determine whether this type of intervention might benefit the child in the absence of any significant side effects, a double-blind, drug-placebo trial is usually conducted (Barkley et al., 1988). To avoid confounding the outcome of such therapeutic trials, participation in the parent training program is postponed until after it has been determined whether the child is likely to continue receiving stimulant medication therapy.

Once it has been determined that the parents of a child with ADHD are appropriate for the training program, a decision must be made as to whether they would be better suited to receive such therapeutic instruction in the context of a multifamily group format or on an individual-family basis. Because there is relatively little empirical basis for arguing in favor of one format

over the other, this decision is based largely on the preferences of the parents, as well as on the clinical judgment of the therapist.

Although it is not necessarily a major factor in the selection process, another practical question that may arise at this time is whether one or both parents need to attend the sessions. Ideally, the presence of both parents is desirable, but this, of course, is not always feasible. Because the understanding, cooperation, and support of the absent parent is necessary for therapeutic gains to be made, the parent in attendance is strongly encouraged to audiotape the session or take detailed session notes, which then may be shared with the absent parent at home.

In addition to the above selection criteria, it is extremely useful to consider a number of general clinical and stylistic considerations that pertain to all facets of the parent training program. First, it is important to recognize that, while there are treatment outlines (Barkley, 1981) and manuals (Barkley, 1987) available to assist clinicians in their efforts to employ the ADHD parent training program, this is by no means a simple program that can be implemented in a cookbook-recipe fashion. On the contrary, it is a therapeutic regimen that requires certain minimum levels of clinical expertise. For example, clinicians using this program should be relatively well versed in current ADHD research findings, so as to address concerns, such as the Ritalin controversy, that may arise from parents who learn about ADHD through the media. Because the ADHD parent training program is fundamentally behavioral in nature, expertise in the use of various child behavior therapy strategies, especially contingency management techniques, is also highly desirable.

Being behavioral in nature, the ADHD parent training program utilizes specific between-session assignments to increase parental skill in using acquired therapeutic strategies. At the start of every session, time is set aside for reviewing parents' efforts to practice such techniques at home. Refinements in their application of these strategies are made, as necessary. When the clinician begins to sense that parents have acquired a certain level of mastery, therapeutic attention is shifted to the next step of the program.

Implicit in the above discussion is that successful implementation of the parent training program requires close collaboration and cooperation between parents and therapists. To this end, it is important for clinicians to convey to parents a sense of genuine understanding, caring, and support. Also, a Socratic style of conveying concepts and techniques is generally used throughout all sessions. Collaboration and cooperation between parents and therapists can be facilitated as well by presenting therapeutic information in ways that are easy to understand and assimilate. In this regard it is important for therapists to avoid using professional jargon that has very little contextual meaning for most parents. Likewise, such information should be discussed as much as possible in the context of commonly encountered, daily childcare situations. Given that parenting youngsters with ADHD can be a very trying and stressful experience, it is sometimes helpful to incorporate humor into the sessions. Clinicians may also find it beneficial to include modeling and visual aids as part of their ongoing therapeutic discussions. For similar reasons, written handouts may be distributed to parents at the end of sessions to serve as reminders of the steps involved in carrying out a particular between-session assignment.

Although most parents adhere fairly closely to the prescribed therapeutic program, some do not. When missed sessions or parental noncompliance are due to unexpected illnesses, family crises, or schedule changes, it generally suffices to schedule makeup sessions and/or to remind parents of the important connection between their adherence to the regimen and their desired therapeutic goals. When these sorts of complications become more regular, it may be necessary to examine whether parent training efforts should be postponed temporarily, until such circumstances have been resolved.

Specific Training Steps. As was noted earlier, the ADHD parent training program does not confine therapists to a specific number of treatment sessions that must *be* followed inflexibly. Instead, it allows therapists to guide parents through training in a step-by-step fashion, taking as many sessions as is necessary to bring about parental mastery of targeted behavior management skills. With this in mind, it is now possible to begin discussing the 10 steps that make up this intervention program. Readers interested in obtaining a more detailed account of these therapeutic procedures should consider reviewing the original sources (Barkley, 1981, 1987) on which the following discussion is based.

Step 1— Program Orientation and Review of ADHD. The main purpose of this step is to acquaint parents with the mechanics of the treatment program, and to begin the process of increasing their knowledge of ADHD. Thus, most of the session is focused on a detailed discussion of the topic of ADHD, often accompanied by a specifically prepared slide presentation, which provides parents with an ongoing visual aid that generally facilitates their attention to and comprehension of the information being presented. Often covered in this presentation are the following topics: the history of this disorder, its primary symptoms, the currently accepted clinical criteria used to formulate its diagnosis, its prevalence rates in both clinical and general populations, various child and family characteristics, the causes of this disorder, and proven and disproven treatment approaches.

Step 2— Understanding Parent-Child Relations and Principles of Behavior Management. After reviewing carryover concerns from the previous session on ADHD, the therapist provides parents with a conceptual framework for understanding deviant parent-child interactions and their therapeutic management. Initially, the theoretical views of Bell (Bell & Harper, 1977) and Patterson (1976) are introduced in general terms. Parents are alerted to four major factors that, in various combinations, can contribute to the emergence and/or maintenance of children's behavior difficulties. This includes a discussion of various child characteristics, parent characteristics, family stresses, and situational consequences.

The therapist also describes in greater detail how situational consequences affect the emergence, maintenance, and/or exacerbation of children's behavioral difficulties. He or she gives parents an overview of general behavioral management principles, as well as guidelines as to how the management needs of children with ADHD are different from those of other children. For example, because youngsters with ADHD become bored easily and quickly, it is essential for parents to recognize that they must use consequences that are salient and meaningful, and that they must change such consequences periodically, to keep them interesting and motivating.

Step 3—Enhancing Parental Attending Skills. In this session the therapist emphasizes the importance of attending positively to children. In particular, the therapist introduces the notion of "special time." Unlike other types of special time that simply involve setting aside time with the youngster, the special time under consideration here is one characterized by the requirement that parents must remain as nondirective and noncorrective as possible. At the same time they must observe and describe their youngster's ongoing play activities in positive terms, while simultaneously ignoring any mildly inappropriate behavior that might arise.

Those who have ever tried to employ this sort of special time are well aware of how difficult it is. Nevertheless, when implemented properly, it is a procedure that frequently leads to improved parental attending skills, as well as to more pleasant parent-child relations.

Step 4—Paying Positive Attention to Appropriate Independent Play and Compliance. After reviewing parental efforts to employ special time, the therapist begins expanding the parents' use of positive attending skills to other domains. One such domain pertains to the tendency of many children, especially those with ADHD, to become disruptive when parents are engaged in some home activity, such as talking on the telephone. Another domain that positive attending skills may be applied to is when parents issue commands that typically lead to compliance (which previously was inadvertently ignored).

Also covered in this session is the manner in which commands are given. Several suggestions are made for modifying both the verbal and nonverbal parameters of how parents communicate commands, thereby increasing their effectiveness in eliciting compliance.

Step 5—Establishing a Home Token System. Following review and refinement of the therapeutic skills that were practiced from the previous session, the therapist embarks upon a discussion of one of the more difficult aspects of the training program: setting up a home token system. Such a system is utilized for the simple reason that positive attending and ignoring strategies are often insufficient for managing children with ADHD. In this phase of the program, rewards are used exclusively for compliance with initial parental requests. Use of penalty strategies is deferred until the next session.

Step 6—Using Response Cost and Time Out From Reinforcement. After reviewing home use of the reward-oriented token system, the therapist introduces the notion of response cost, which represents the first time in the training program that a penalty or punishment approach is considered. More specifically, the therapist instructs parents to begin deducting tokens for noncompliance with requests and/or violation of household rules.

Along with advising parents to handle noncompliance by means of response cost, the therapist introduces parents to the use of time out from reinforcement, or simply, time out. Although most types of noncompliance will continue to be handled via response cost, the therapist encourages parents to identify one or two particularly troublesome sources of noncompliance that will be addressed by means of time out.

Step 7—Extending Time Out to Other Misbehaviors. Initially, the therapist reviews parental efforts to incorporate response cost and time out strategies into the ongoing home token system.

Given the complexities of implementing time out, most of this session is centered around a detailed analysis and refinement of parental efforts to employ this technique at home. Provided that this has gone fairly well, and provided that parents feel comfortable with its use, the therapist encourages them to begin using time out for two or three other types of noncompliance and/or rule violations.

Step 8—Managing Children's Behavior in Public Places. Assuming that parents to this point have demonstrated a satisfactory level of expertise in using home-based strategies, the therapist instructs them in how to begin generalizing these skills to problematic settings outside the home. Among the many problematic outside settings often identified by parents are grocery stores, department stores, movie theaters, restaurants, and churches. In addition to learning modified contingency management techniques for use in public, parents learn how to avoid many difficult situations by reviewing rules and consequences with their children before entering the problematic public situation.

Step 9—Handling Future Behavior Problems. After reviewing and fine-tuning parental efforts to employ newly acquired management skills in public places, the therapist takes some time to review all previously covered aspects of the training program. As needed, the therapist makes necessary suggestions for increasing parental effectiveness in using any given procedure. Finally, the therapist reviews with parents various ways to handle problems that they believe might arise in the future.

Step 10—Booster Session. Although any length of time may be deemed acceptable, it is customary for the ADHD Clinic staff to meet with parents for a booster session approximately 1 month after conducting Step 9. During this session the therapist generally readministers pertinent rating scales and questionnaires, which serve as indices of any posttreatment changes that may have occurred. Further review and refinement of previously learned intervention strategies is conducted as well. Also established at this time is a mutually agreed-upon clinical disposition. If desired, this may include scheduling of additional booster sessions.

Research Findings

Despite its widespread visibility and use as a therapeutic tool, the ADHD parent training program has not yet received comprehensive empirical assessment of its efficacy. In well-controlled evaluations of the clinical effectiveness of this program in its entirety, however, preliminary support has been obtained. In a study involving 50 preschool children with ADHD and their families, use of this training program led to increased child compliance, which seemed to be mediated by several improvements in observed parenting skills (Pisterman et al., 1987). In a second study, using three single-case designs, significant improvement in parent ratings of home behavior, as well as direct observations of mother-child interactions, resulted from training parents in these skills (Pollard, Ward, & Barkley, 1983).

Apart from the limited availability of studies that have directly examined the efficacy of this particular combination and sequence of child management skills, a substantial body of research exists pertaining to the various techniques that serve as a foundation for this training program. Findings obtained from such investigations clearly substantiate its immediate efficacy in managing noncompliance in clinic-referred children, its generality across behavior, and its long-

term effectiveness (Baum & Forehand, 1981; Eyberg & Robinson, 1982; Forehand & McMahon, 1981; Forehand, Rogers, McMahon, Wells, & Griest, 1981; Forehand, Wells, & Griest, 1980; Webster-Stratton, 1984).

CONCLUSION

The treatment of ADHD requires expertise in many different treatment modalities, no single one of which can address all of the difficulties likely to be experienced by children with this disorder. Among the available treatments, stimulant medication and parent training in child management skills remain the most popular and effective approaches for providing relief of these symptoms and for preparing parents to cope with this developmental disorder. Classroom management procedures, as well as training in anger control, self-control, and social skills, are adjunctive procedures with some effectiveness. Regardless of which type is employed, treatments must be maintained over longer time intervals than has heretofore been the case, if greater impact is to be made on the longterm outcome of children with ADHD.

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