Table 14.6
Prescription Psychostimulants for ADHD

	Generic Name	*Brand Name*	*Dosing Schedule*	*Onset of Action*	*Peak Half-Life*	*Peak Behavioral Effect*	*Duration of Behavioral Effect*
Extended Release	Mixed salts of amphetamine	Adderall XR	q A.M.	60–120 minutes	11–13 hours	Bimodal	10–12 hours
	Dexmethylphenidate hydrochloride	Focalin XR	q A.M.	60 minutes	2–4.5 hours	Bimodal	6–8 hours
	Methylphenidate hydrochloride	Concerta	q A.M.	30–120 minutes	3.5 hours	Bimodal	12 hours
	Methylphenidate transdermal system	Daytrana	q A.M.	60–120 minutes	1.4–4 hours	NA	12 hours
Intermediate Release	Methylphenidate hydrochloride	Metadate CD	q A.M.	30–120 minutes	6.8 hours	Bimodal	6–8 hours
		Metadate ER	q A.M.	60–90 minutes	NA	5 hours	4–8 hours
		Ritalin SR	b.i.d.	60–90 minutes	NA	5 hours	4–8 hours
		Ritalin LA	q A.M.	30–120 minutes	2.5 hours	Bimodal	6–8 hours
	Dextroamphetamine	Dexedrine Spansule	b.i.d.	60–90 minutes	12 hours	8 hours	6–8 hours
Immediate Release	Methylphenidate	Ritalin	b.i.d. to t.i.d.	20–60 minutes	2.8 hours	2 hours	3–6 hours
		Methylin	b.i.d. to t.i.d.	20–60 minutes	3 hours	2 hours	3–6 hours
	Dexmethylphenidate hydrochloride	Focalin	b.i.d. to t.i.d.	20–60 minutes	2.2 hours	2 hours	4 hours
	Mixed salts of amphetamine	Adderall	b.i.d. to t.i.d.	30–60 minutes	9.7–13.8 hours	1–2 hours	4–6 hours
	Dextroamphetamine	Dextrostat	b.i.d. to t.i.d.	20–60 minutes	10.25 hours	2 hours	4–6 hours
	Dexedrine	b.i.d. to t.i.d.	20–60 minutes	12 hours	3 hours	4–6 hours	

q A.M. = Once daily in the morning; b.i.d. = Twice a day; t.i.d. = Three times a day.

wide variation in onset and behavioral half-life among brands. As shown in Table 14.6, onset of medication effects varies between 20 and 120 minutes, and therapeutic effects last between 3 and 12 hours. Diminished therapeutic effectiveness occurs away from the peak time of behavioral effect. Outcome measures, including subjective teacher and parent verbal reports, may thus only partially reflect medication effects or not reflect them at all if based on inactive time parameters. Increasing the dosage does not remedy the problem; low and high doses of the same medicine have an identical behavioral half-life and time-response course. Moreover, it is important to consider the overlap of behavioral half-lives for each medicine to optimize treatment effects (i.e., a second dose must be administered before the behavioral effects associated with the first dose wear off). It is encouraging to note that most children who fail to benefit from a prescribed stimulant respond positively to an alternative formula. Finally, brand name mixtures (e.g., Ritalin) are typically more potent than generic medications (e.g., methylphenidate), and switching from the former to the latter may result in diminished therapeutic efficacy.

Dose-Response Effects

A large-scale observation study of 76 children with ADHD provides a representative précis of dose-response effects in natural classroom environments (Rapport, Denney, DuPaul, & Gardner, 1994). Children received each of four MPH doses and a placebo for 1 week in a counterbalanced order following baseline assessment. Attention (percent on-task), academic efficiency (percentage of assignments completed accurately), and classroom deportment (teacher ratings of behavior) all improved significantly with increasing MPH dose, as depicted in Figure 14.4. Collectively, these findings and those derived from experimental studies using sophisticated learning and cognitive paradigms (Rapport & Kelly, 1991) fail to support earlier views that cognitive function and behavior are optimized at low and high dosages, respectively (Sprague & Sleator, 1977).

Despite showing *statistically significant* effects for all dose levels relative to baseline and placebo, a more interesting question concerns the *clinical significance* of the results; that is, to what extent are treated children functioning like their typically developing classmates with respect to school performance and behavior? Conventional metrics (e.g., the reliable change index) address this question by quantifying the degree to which treated children's attention, academic efficiency, and classroom deportment are similar to classmate controls. Figure 14.5 reveals an interesting pattern of results. Attention and classroom deportment were either significantly improved or normalized in high percentages of children under active medication (76% to 94%), whereas only 53% showed this level of change in academic efficiency. These findings highlight the observation that improved attention and behavior do not necessarily translate into improved academic functioning for approximately half the children receiving psychostimulants. The findings also emphasize the need for auxiliary interventions (e.g., academic tutoring) and teacher rating scales that reflect improved adaptive functioning (e.g., the Academic Performance Rating Scale; DuPaul, Rapport, & Perriello, 1991). The *deceased person rule* is a useful guideline for determining a scale's validity for assessing adaptive functioning in children. If a deceased person can obtain a desirable score on the scale due solely to an absence of maladaptive behaviors (e.g., bothers others, easily distracted, acts like he's driven by a motor are endorsed as *not*

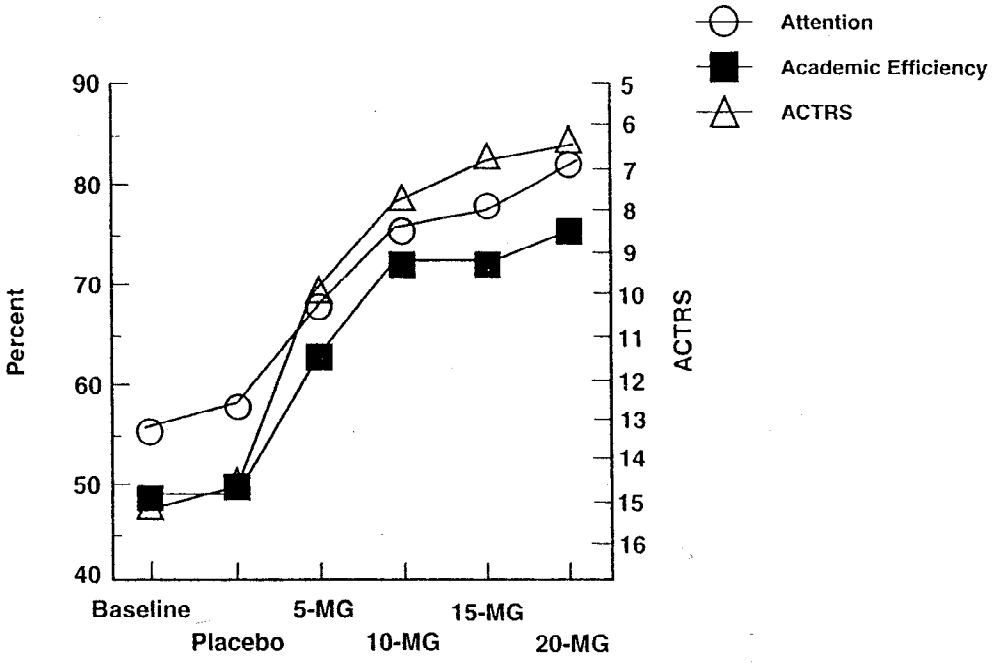

Figure 14.4 Mean group dose-response curves for three classroom measures. ACTRS = Abbreviated Conners Teacher Rating Scale. Upward movement on the ordinate indicates improvement. From "Attention Deficit Disorder and Methylphenidate: Normalization Rates, Clinical Effectiveness, and Response Prediction in 76 Children," by M. D. Rapport, C. B. Denney, G. J. DuPaul , and M. J. Gardner, 1994, *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, pp. 882–893. Adapted with permission.

occurring), then it probably is not a good outcome measure for children (Rapport, 1993).

POTENTIAL EMERGENT EFFECTS

Side effects can and do occur with stimulant treatment, but most can be avoided or minimized with appropriate management. The most commonly reported side effects associated with psychostimulant treatment fall into one of three categories: cardiovascular effects (i.e., heart rate, blood pressure), physical effects (i.e., weight and growth), and physical and behavioral complaints. A recent review indicates that cardiovascular and physical effects associated with psychostimulant therapy are usually transient, dose-dependent, readily resolved by discontinuing therapy, and fail to remain significant in long-term follow-up studies (Rapport & Moffitt, 2002). Other common side effects, such as reduced appetite and associated weight loss (or the failure to make expected weight gains), can be minimized or eliminated by ingesting medication after rather than prior to meals. Clinical lore held that food reduced drug efficacy, but this has not held up to scientific scrutiny (Swanson, Sandman, Deutsch, & Baren, 1983). Physical and behavioral complaints frequently reported following psychostimulant treatment must be disentangled from the general discomfort reported by same-age

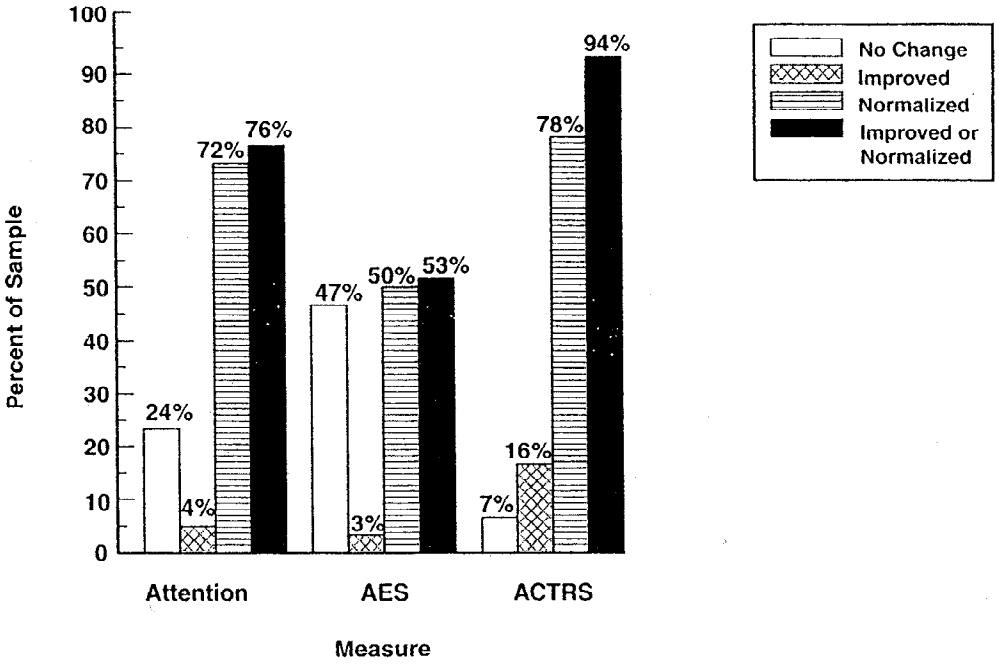

Figure 14.5 Clinical status of the group collapsed across methylphenidate dose conditions for three classroom measures. AES = Academic efficiency score; ACTRS = Abbreviated Conners Teacher Rating Scale. From "Attention Deficit Disorder and Methylphenidate: Normalization Rates, Clinical Effectiveness, and Response Prediction in 76 Children," by M. D. Rapport, C. B. Denney, G. J. DuPaul , and M. J. Gardner, 1994, *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, pp. 882–893. Adapted with permission.

children not receiving medication. For example, high percentages of typically developing children report headaches, daily fatigue, sore muscles, and abdominal discomfort; children with clinical disorders other than ADHD report higher levels of these complaints in addition to stomach aches under no-medication conditions. Obtaining baseline measures of children's physical and behavioral complaints prior to initiating a medication protocol is necessary to sort out the extent to which effects are due to typical bodily complaints rather than medication.

BEHAVIORAL TREATMENT

Behavioral interventions designed to treat children with ADHD mainly focus on improving classroom functioning and parent-child interactions. Second-tier interventions ameliorate dysfunctional peer relationships and specific skill deficits by means of peer tutoring, group-level management techniques, mediation, and special skills training. The discussion in this section focuses exclusively on classroom interventions and parent training for two reasons: Poor academic functioning (including maladaptive behavior) is the chief complaint of parents and teachers leading to referral for a diagnostic evaluation, and auxiliary interventions are currently in a nascent

developmental stage with limited empirical validation (for reviews, see Barkley, 2006; DuPaul & Stoner, 2003).

OVERVIEW OF CLASSROOM INTERVENTIONS

Early behavioral interventions focused on decreasing disruptive, maladaptive behavior in children with ADHD. The discovery that reducing disruptive behavior rarely translated into improved academic performance led to the abandonment of these interventions. This was an important finding, because academic achievement is one of the best predictors of a good prognosis and favorable long-term outcome in children. Accumulating research also revealed that behavioral interventions requiring teachers to deliver positive feedback (using verbal praise or by administering points, stars, or checks on a sheet containing descriptions of desirable behavior) were also less than ideal. The most pronounced shortcoming involved the excessive demands on teacher time relative to the large numbers of students in a typical classroom. A second criticism was that many children with ADHD tended to be drawn off-task by the delivery of positive feedback and experienced difficulty getting back on-task—an effect opposite of that intended by the intervention (Rapport, 1983).

Empirical studies examining the relative efficacy of behavioral interventions beginning in the early 1970s and continuing through the 1980s revealed an interesting finding. If the behavioral intervention directly targeted improved academic performance as its main goal (e.g., by making consequences specific for completing academic work successfully), disruptive behavior nearly always showed a concomitant decline in frequency. The procedure was coined the *incompatible response approach* (Allyon, Layman, & Kandel, 1975). It implied that increased academic performance was incompatible with disruptive conduct in the classroom and should be the primary target of intervention efforts.

During the 1980s and continuing to the present, the most successful classroom interventions followed this general principle and focused on developing incentive and/or feedback systems that directed children's attention to the completion of their school work. A combination of positive and mildly aversive corrective feedback delivered consistently, continuously, unemotionally, and with minimal delay worked optimally. This type of intervention relies on a behavioral principle termed *response cost*. Children earn points that can be traded for structured free time or specific classroom activities and lose points for not attending to their academic assignments (Rapport, Murphy, & Bailey, 1982).

RESPONSE COST INTERVENTIONS

The Attention Training System (ATS) is a prototypical example of a response cost intervention procedure for the classroom (see Figure 14.6). After receiving basic instructions, children earn 1 point per minute throughout the duration of the academic period. The ATS display window shows accumulated points.

The classroom teacher possesses a handheld remote-control device (see Figure 14.6) that is used anywhere within the classroom to control up to four student units. This allows the teacher to work with other students throughout the academic period, either in small groups or individually, while monitoring targeted children's behavior. The teacher continues with instructional activities so long as targeted students are appropriately engaged in academic activities, because the ATS automatically awards points on a 1-minute interval for remaining on task. This procedural component is

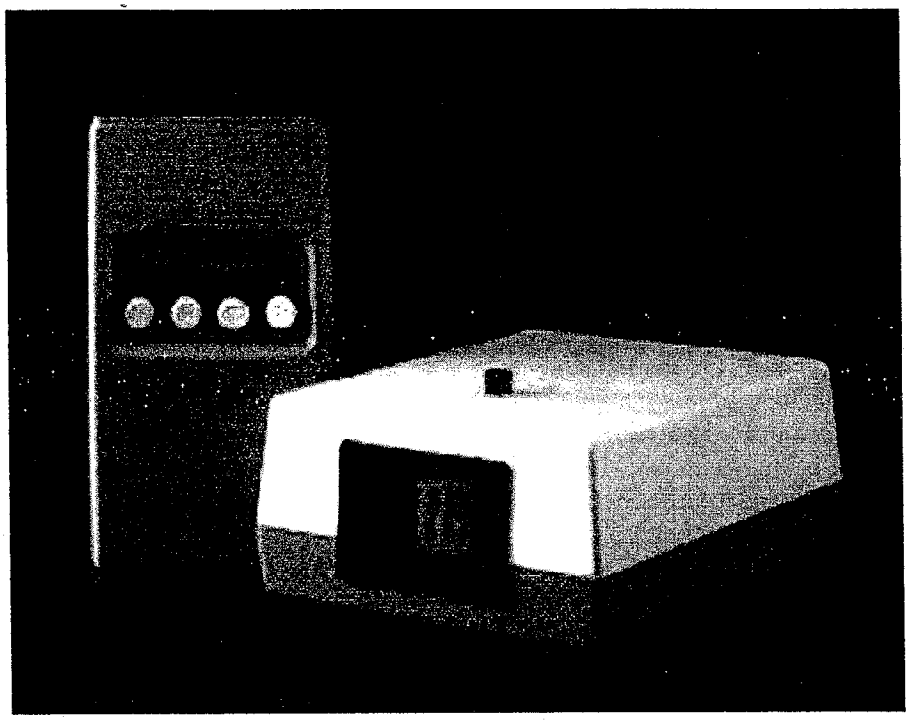

Figure 14.6 The Attentional Training System (ATS). Invented by M.D. Rapport (see Rapport, Murphy, & Bailey, 1982) for treating children with ADHD. Manufactured and distributed for commercial use by Gordon Systems, DeWitt, NY.

advantageous relative to traditional behavioral interventions for two reasons: It permits teachers to continue their ongoing instructional activities rather than stopping to deliver incentives to targeted students, and it avoids inadvertently drawing children with ADHD off-task by delivering incentives or verbal feedback.

The teacher activates the handheld held device by pushing a button on occasions when students are not attending to their assigned activities. The red dome on the student's desk module illuminates for 15 seconds and signals the child of an electronic point loss from his or her accumulated total due to off-task behavior. The teacher immediately returns to the ongoing instructional activity and checks the student's progress again in a minute or two. Earned points are recorded in an observation log at the conclusion of the academic period and exchanged for structured free-time activities later in the day (e.g., 15 points earns 15 free-time minutes). A leaner point-to-earned-free-time ratio (e.g., 2:1) is initiated after several weeks of successful classroom functioning. Dr. Mark D. Rapport invented and designed the original ATS, and Dr. Michael Gordon (Gordon Systems, DeWitt, NY: www.gsi-add.com) commercially developed and marketed the system.

Several variations of response cost interventions have been developed and examined empirically over the past decade. One alternative uses color-coded cards; students begin an academic period with a specific color card, which is replaced with a lower point value color card for classroom infractions. Card construction typically

utilizes either a Velcro backing or paper pocket to facilitate visual display within the classroom. Accumulated earnings based on card colors are exchanged for desirable activities and privileges during the day based on preassigned point totals (Barkley et al., 1996).

Group format response cost interventions may be preferred in situations in which several or even most students in the classroom evince disruptive conduct and/or difficulties remaining on task. For example, the entire class can be awarded tokens such as poker chips at the beginning of an academic period (e.g., placed in a bowl or on a display board with Velcro), with each classroom infraction costing the students one chip. Chips remaining at the end of the period are cashed in for structured free-time activities. Group-level response cost may also be preferable to traditional token reinforcement systems for preschoolers owing to the reduced teacher demands. For example, teachers preferred a response cost intervention wherein students lost buttons from a chart for classroom infractions to a traditional token system that administered buttons for following rules (McGoey & DuPaul, 2000).

OTHER SCHOOL-BASED INTERVENTIONS

Varieties of behavioral procedures used in isolation, or as a comprehensive intervention component, prove effective for reducing discrete incidences of maladaptive behavior. These include time-out and carefully delivered reprimands and corrective statements. The maintenance and generalization of treatment effects—similar to other behavioral interventions—is nonexistent in most cases. That is, desirable behavioral effects are evidenced only while contingencies are actively employed; long-term maintenance of treatment effects has never been empirically demonstrated. The largest intervention study for children with ADHD conducted to date, the Multimodal Treatment Study, cogently illustrates this point. Children assigned to the comprehensive psychosocial treatment group participated in an 8-week summer treatment program and subsequently received ongoing teacher-administered behavioral interventions throughout the school year, with additional paraprofessional assistance for the initial 3 months. Poststudy results revealed that children were not significantly improved relative to a treatment-as-usual control group (i.e., a group receiving typical community-based services) and were significantly worse relative to a medication-only (psychostimulant) group (Jensen et al., 2001).

These findings are not particularly surprising given the suspected neurobiological nature of the disorder. They highlight the fact that extant interventions for ADHD are maintenance treatments that require continuous monitoring and adjustment to optimize effectiveness.

Recent efforts to improve the classroom functioning of children with ADHD focus on innovative instructional designs, computer-assisted instruction, and environmental management. The instructional design thrust focuses on altering aspects of academic tasks, such as the presentation format, types of materials, length, and timing, to better capture the child's attention and optimize learning time. Extant research indicates that stimulating tasks that can be completed within a brief time period and that vary the presentation format, interspersed with nonacademic assignments, are associated with improved attention and completion rates (for a review, see DuPaul & Stoner, 2003). Initial attempts to develop computer-assisted interventions for ADHD are promising but require replication with larger numbers of children for extended periods of time (e.g., an entire school year). Computer-based, comprehensive

curriculums, all-day classroom management, and school-home communication programs have been proposed but unrealized to date (Rapport, 1998).

Attempts at environmental management date back to Cruickshank and Dolphin's (1951) initial attempt to isolate children with hyperactivity in three-sided cubicles to reduce stimulation based on the suspicion of a defective attentional filtering system. This practice continues today; children with ADHD are frequently placed away from other children and near the teacher's desk to minimize distraction. Extant research, however, has never consistently demonstrated that children with ADHD are more easily distracted than sex- and age-matched controls. In fact, a majority of studies specifically designed to study this phenomenon have failed to find significant between-group differences in distractibility (Kessler, 1980).

Home-based contingency management systems are widely used, wherein parents provide daily incentives or mild punishment based on children's behavior at school. This type of system usually entails children's receiving checkmarks, tokens, or other forms of visual feedback (e.g., daily ratings) throughout the school day following incidences or periods of appropriate behavior and/or academic accomplishment. Parents review a daily summary of the child's school day and mete out agreed upon consequences. These types of systems are noteworthy for increasing communication and feedback between school and home but have several inherent disadvantages and are generally less robust relative to school-based systems. The most significant disadvantage is the extended delay between the child's behavior (adaptive or maladaptive) and receipt of consequences. Temporal proximity is an important part of any behavioral reinforcement scheme, and particularly relevant for children with ADHD for several reasons. Children with ADHD typically exhibit poor delay skills and suboptimal working memory and organizational abilities (children fail to remember specifics about the day, and parents receive daily reports inconsistently). Extant research also convincingly demonstrates that immediate consequences are significantly more effective than delayed consequences for children with ADHD. Other disadvantages of home-based programs include the inability of many parents to provide consistent consequences and the negative emotional carryover effects associated with returning home to aversive reprimands in the context of an already strained parent-child relationship.

Parent-Child Interventions

Behavior management training is nearly always recommended for parents of children with ADHD. The reason is rather straightforward. Most parents have never received formal training in child development or child management unless they were raised in a large family or attended college and majored in psychology, child development, or education. As a result, most have only anecdotal information about normal development, and know even less about how to manage maladaptive behavior.

The thrust of behavior management programs is threefold. A first initiative is to educate parents concerning the use of effective behavior management techniques (e.g., reinforcement, time-out, extinction). Subsequent sessions focus on instructing parents in how to exploit this knowledge to decrease maladaptive and increase adaptive functioning throughout the day. The final stage focuses on teaching parents how to generalize this knowledge to different settings and situations and *preplan* for potentially aversive situations (e.g., extended car rides, grocery shopping). Considerable emphasis is placed on assigning homework tasks, preplanning for the upcoming

week, and reviewing and suggesting strategic techniques for recent parent-child difficulties. Most comprehensive programs also emphasize implementing organizational techniques at home (making charts, arranging folders and backpacks, establishing a designated homework area and schedule) and teaching parents how to use constructive verbal communication techniques with their child. Collectively, parent behavioral management training is usually quite effective, but like other ADHD interventions, is a maintenance treatment that requires ongoing adjustments and continuous effort. Detailed behavior management programs are available from several sources (e.g., Barkley, 2006).

Case Description

Case Introduction

Sean was a 10-year-old male referred by a rural school system for a comprehensive clinical diagnostic evaluation and second opinion. He was previously seen by a licensed clinical psychologist, who concluded that he met diagnostic criteria for ADHD based on parent and teacher rating scales, a 50-minute parent interview, a brief interview with the child, and the absence of anxiety based on a normed child anxiety rating scale. Sean's parents requested special accommodations by the school to address their son's chronic and worsening difficulties. The school system sought to ensure that the ADHD diagnosis was accurate before scheduling an Individualized Educational Assessment Plan (IEP) meeting to determine appropriate educational goals, interventions to accomplish these goals, and assessment procedures.

Presenting Complaints

Sean's parents reported chronic and worsening school difficulties. Attending school each day was becoming increasingly problematic "because of his ADHD." Discussions with school personnel indicated that Sean was experiencing difficulties in multiple areas of functioning. His ability to pay attention was variable; he could pay attention for extended time intervals some days, yet appeared highly distractible and unfocused on other days. Sean's gross motor activity level was equally perplexing. The classroom teacher reported that he was usually able to sit and stay in his seat without signs of excessive motor activity, but became fidgety and even hyperactive at other times. Sean had no close friends in school and only one or two in his neighborhood despite the availability of children his age in both settings. He frequently came to school late and ate lunch by himself in the school cafeteria. Peer relationships were mixed: He appeared to interact well with other children but characteristically elected to avoid companionship.

History

Historical review of records indicated long-standing difficulties at home and in school, despite above-average intelligence. School problems included attentional difficulties, impulsivity, and sporadic hyperactivity. Records also indicated difficulties with peer relationships, poor organization skills, difficulties

completing academic assignments on a routine basis, and a growing dislike for school.

Assessment

Teacher and Parent Ratings Scales

Broad- (CBCL, TRF, CSI) and narrow-band (ADHD Rating Scale) rating scales completed by the classroom teacher and parents revealed a mixed pattern of results. Teacher ratings for the TRF adaptive functioning indices indicated above-average learning and school performance but below-average functioning in areas related to happiness and effort. Internalizing dimension TRF scores were moderately elevated, indicating possible anxiety and social withdrawal. Externalizing dimension scores were moderately elevated for inattentiveness and hyperactivity. The *DSM* clinical syndrome scale scores were elevated for ADHD and anxiety disorder.

Parent endorsements were between 1.5 and 2 standard deviations above the mean for ADHD-related symptoms (inattention, impulsivity-hyperactivity) based on age and sex norms. The Externalizing broad-band scale was significantly elevated due to endorsement of ADHD, ODD, and CD behavior problems. The CSI was significantly elevated for symptoms related to ADHD, but also included endorsements of behavioral and emotional problems related to Generalized Anxiety Disorder, Separation Anxiety Disorder, and specific phobias. Collectively, parent and teacher ratings presented a mixed picture of ADHD-like symptoms (primarily by parent endorsement) and anxiety symptoms.

Behavioral Assessment: Classroom Observations

Unobtrusive classroom observations were scheduled to obtain information concerning Sean's ability to pay attention, complete academic assignments, and participate in classroom discussions and peer interactions. Sean and two typically developing male classmates were observed over a 2-day period as an initial step to minimize reactivity. Sean was unacquainted with the consulting clinical psychologist.

Behavioral observations from the Direct Observation Form (Achenbach & Edelbrock, 1986) revealed a mixed and variable pattern of syndrome scale scores. The Withdrawn-Inattentive and Hyperactive scales were moderately elevated for some observation intervals, but within the normal range for other recording periods. Observations of on-task behavior ranged from 40% to 100% across the 2 days. Written narratives revealed that Sean could read at his desk for 30 contiguous minutes, complete a reading assignment without difficulty, and occasionally volunteer to answer questions posed by the classroom teacher. On other occasions, the teacher needed to prompt him to pay attention. Sean worked cooperatively with other children during small group work. He requested to go to the bathroom on several occasions during both observation days, which the teacher attributed to excessive water consumption due to the high elevation, low humidity climate.

(continued)

Behavioral Assessment: Playground and Lunchroom Observations

Observations of Sean's behavior on the school's playground were recorded using the ADHD School Observation Code (Gadow, Sprafkin, & Nolan, 1996) for approximately 30 minutes per day over a 2-day time span. The instrument was developed particularly for observations of children with externalizing disorders in school settings. Results revealed no incidences of physical aggression, noncompliance, or verbal aggression, and lower than normal appropriate social behavior.

Sean sat near, but not next to, other children while eating lunch in the cafeteria. He ate slowly, picked at his food, and appeared ensconced in thought throughout the lunch period. Collectively, behavioral observations failed to show the elevations for aggressive behavior, noncompliance, and inappropriate social behavior typically reported for children with ADHD.

Psychoeducational Assessment

The Wechsler Intelligence Scale for Children—Revised results revealed that Sean's intellectual abilities were within the very superior range, with no significant discrepancies noted in higher order factor scores or individual subtests except for coding and digit span, which were moderately lower. The Kaufman Test of Educational Achievement (Kaufman & Kaufman, 1983) results revealed above-grade and -age expectancy achievement in mathematical applications (98th percentile) and computation (77th percentile) and reading comprehension (99th percentile) and decoding (63rd percentile). Spelling achievement was average and below expectancy based on assessed intelligence. Observations of his behavior during the assessment yielded an erratic pattern. He demonstrated excellent concentration and low motor activity throughout most of the assessment, but exhibited excessive motor activity and moderate agitation during several timed tests.

Semi-Structured Clinical Interview

The K-SADS was administered separately to Sean and his parents. Parents endorsed all items relevant to ADHD, with an early onset and continuing, worsening course. ODD items were also endorsed with high frequency, with onset at 7 years and a progressive, worsening course. Separation anxiety criteria were fully met, but follow-up probes indicated that Sean did not complain of somatic symptoms prior to school days or experience other common symptoms of Separation Anxiety Disorder while attending school. Several panic attack symptoms were endorsed (shortness of breath, accelerated heart rate, occasional trembling and shakiness, feelings of unreality), but a negative history of discrete episodes of spontaneous panic attacks was reported. Evidence for Simple and Social Phobia was negative except for airplanes (related to a fear of dying). Review of generalized anxiety symptoms yielded endorsements of most items. No evidence of other disorders, including mood and thought disturbance, was revealed. Overall, Sean's parents described him as a "worrier" with multiple fears and concerns.

The child interview was remarkable. Sean admitted experiencing some difficulties with concentration and completing academic assignments, but denied

other symptoms characteristic of ADHD, mood disorders, thought disorders, CD, ODD (except for arguing with and disobeying parents), Posttraumatic Stress Disorder, and other anxiety disorders until reviewing obsessive-compulsive symptoms. He described a chronic and worsening history of obsessional thinking, particularly thoughts concerning contamination, and, to a lesser extent, "getting things right." Symptom onset coincided with an outbreak of body warts that required careful hygiene and regular washing at 7 to 7.5 years of age.

Sean currently washes his hands between 20 and 30 times daily after touching various objects or thinking about germs. Morning and nighttime rituals are laborious and complex and accompanied by excessive worry concerning whether the ritual—particularly morning bathing—was performed correctly. Myriad other rituals were detailed, such as not permitting his silverware to touch anything off his plate, having his parents wrap his lunch in a prescribed manner to avoid contamination, checking under tables at restaurants for gum, and touching one hand or foot an equal number of times while avoiding sidewalk cracks.

Sean's symptoms were particularly disabling at school. He feels clean for approximately .5 hours before requesting a bathroom break to wash his hands. His inconsistent completion of in-seat academic assignments and sporadic hyperactivity reflects his obsessional thinking that things must be exactly right and completed in a prescribed manner. For example, he checks and rechecks math problems for correctness, frequently beginning with the first problem even if he has completed a full page of problems. He also flips back to previously read pages to check whether he missed reading a word. These checking behaviors interfere with his ability to complete in-class assignments and tests. He becomes highly anxious that he won't be able to complete the task in time, is forced to abandon his checking rituals, and rushes through the remainder of the assignment or test. Other Obsessive-Compulsive Disorder (OCD) symptoms accounted for parent-endorsed behavioral difficulties; for example, his inability to stay at a friend's house overnight was related to his need to engage in daily rituals and the potential for embarrassment rather than separation fears.

Case Conceptualization

The onset, course, and duration of behavioral and academic problems were consistent with ADHD. Teacher scale endorsements suggested the presence of ADHD, anxiety, and affective disturbance problems. Parent ratings, coupled with parent clinical interview data, revealed a pattern of overendorsed clinical symptomatology; epidemiological evidence indicates an extremely low probability for greater than three co-occurring clinical disorders in a child. Parental overendorsement frequently signifies parental psychopathology. Behavioral observations produced a mixed pattern of results: Sean's concentration, reflective problem solving approach, and tenacity were exceptional for a 10-year-old boy, but deteriorated under particular timed test situations. This pattern is characteristic of anxiety rather than ADHD. A diagnostic picture of OCD was crystallized following the child clinical interview, and highlights the fact that children are often the most salient source for examining internalizing problems. Sean's parents had no idea of the intrusive nature or impairing extent of his illness.

(continued)

Course of Treatment, Assessment of Progress, Complicating Factors, and Follow-Up

Additional assessments were undertaken to detail the full range of Sean's obsessive-compulsive clinical features using highly specialized OCD instruments (e.g., Yale-Brown Obsessive Compulsive Scale). A full clinical report, coupled with a recommendation for cognitive behavior therapy, was forwarded to the school board. Appropriate treatment facilities were unavailable in Sean's community, and the school system paid for in-patient treatment at an out-of-state psychiatric hospital. Sean and his family relocated following his discharge from the hospital to enable him to receive booster therapy sessions, which are nearly always required for severe OCD. As a result, follow-up care consisted of ensuring that appropriate clinical information was forwarded to the new treatment facility and helping the parents locate an appropriate treatment facility.

TREATMENT IMPLICATIONS OF THE CASE

The described case highlights the need to conduct a comprehensive diagnostic assessment for referred children. Empirically supported treatments present the sine qua non for children with OCD but must often be modified to account for the unique features of the child's presentation and other living situations. Weekly monitoring of OCD symptoms using psychometrically sound instruments is recommended.

RECOMMENDATIONS FOR CLINICIANS

Most practicing clinical psychologists will be unable to conduct direct observations of referred children owing to practice and reimbursement limitations. The described case, however, highlights the importance of obtaining information from multiple sources, including a semi-structured interview with the child. Cover all sections in the basic interview, rather than bypassing sections based on the child's clinical presentation or parent report. No one in Sean's life had any suspicions concerning his OCD symptoms, nor the impairing nature of the disorder.

RECOMMENDATIONS FOR STUDENTS

Students interested in child psychopathology must develop competency with a wide range of clinical assessment instruments. Some training programs do not mandate learning how to conduct structured and semi-structured clinical interviews with children, and others fail to teach students how to ask questions, probe responses, or use examples appropriate for children of different ages, sexes, and cultural backgrounds. It is incumbent upon you to learn these techniques from appropriate workshops and training sites to the greatest extent possible.

SUMMARY

Misdiagnosis and overdiagnosis of ADHD has increased exponentially in recent years due to myriad factors. Among the most influential are the nonpathognomic nature of

ADHD symptoms (e.g., inattention), unrealistic time constraints permitted for conducting a comprehensive diagnostic evaluation, and an overreliance on rating scales and nonstandardized clinical office interviews. Evidence-based diagnostic practice procedures, whereby valid information is obtained from multiple sources pertaining to a child's past and current functioning, are recommended to yield incremental benefit for clinical psychology practice.

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