



CHAPTER SIX

Attention Deficit/ Hyperactivity Disorder



Symptoms



Ricky Smith was a 7-year-old African-American male referred by his school psychologist, principal, and mother (Mrs. Smith) to an outpatient community mental health clinic. At the time of his initial assessment, Ricky was in second grade. During her initial call to the clinic, Mrs. Smith indicated that her son was “out of control.” When asked for specifics, Mrs. Smith simply said that Ricky “was all over the place” and “constantly getting into trouble.” As a single mother, she was particularly overwhelmed by her son’s behavior and scheduled an appointment for 7 days later. Following a postponement, Mrs. Smith and Ricky came into the clinic about 3 weeks after her initial call.

As part of the evaluation, Ricky and his mother were interviewed separately by a doctoral intern in clinical psychology. Ricky was interviewed first and was polite, reserved, and a little socially anxious. He reported having difficulty adjusting to his new school and especially to his new teacher. He said that his teacher, Mrs. Candler, was always yelling at him and sending notes home to his mother. When asked why the teacher was yelling at him, Ricky said first that he didn’t know, but then he said it was mostly about not paying attention or following class rules. Ricky said he was often “on red”; the classroom had a discipline system in which students had to change their name card from green to yellow to orange to red for each infraction of the rules. A red card meant an automatic call to the child’s parents. In the past month alone, Ricky had accumulated five red and seven orange cards.

When asked if he liked school, Ricky shrugged and said that he liked some of the classroom activities, especially those related to science (the class was currently studying the growth of tadpoles). He said he had a few friends, but often he had to keep to himself. This was because Mrs. Candler had him spend much of the school day in a corner of the classroom to complete his work. Unfortunately, little of the work was successfully finished. Ricky said he felt bored, sad, tired, and angry in the classroom. He wanted to leave school and stay home but knew this was not likely.

With respect to events outside school, Ricky said that his mother also yelled at him a lot. However, because his mother was often working, Ricky was usually taken care of by his 14-year-old sister. During this time, Ricky would watch television, play videogames, or ride his bicycle outdoors. He said he felt happiest when riding his bike because nobody yelled at him and he could "go wherever I want." Other questions revealed that Ricky had no problems with adaptive behaviors like dressing and eating but did have difficulty sleeping through the night. In addition, Ricky said he felt bad about "being a pain to my mom" and felt confused about why he was doing so poorly in school.

A subsequent interview with Mrs. Smith confirmed most of Ricky's report, with added detail. For example, Mrs. Smith revealed that Ricky was almost intolerable in the classroom, often throwing tantrums, crying when asked to do something, stomping his feet, and being disrespectful to the teacher. In particular, Ricky had a habit of saying "No" and "I don't care" to the teacher, who would make him change his card as a result. Mrs. Smith had already attended four conferences with the teacher at school, including one with the principal and school psychologist as well. The teacher wanted Ricky referred to special education classes, but Mrs. Smith opposed this. The school psychologist instead recommended that Ricky be evaluated by someone outside the school district. This suggestion prompted Mrs. Smith's call to the mental health clinic.

Mrs. Smith also reported that her son was generally "out of control" at home. He would not listen to her commands and often ran around the house until he got what he wanted. She and her son often argued about his homework, chores, misbehavior, extended absences from home, and her work schedule. Mrs. Smith complained that Ricky did not seem to understand what she said some of the time, and that he seemed depressed. More detailed questioning revealed that Ricky often fidgeted and tended to lose many of his school materials. He was quite disorganized and paid little attention to long-term consequences. In addition, the child was difficult to control in public places like a supermarket or church.

Mrs. Smith speculated that certain family factors contributed to Ricky's behavior. She and her husband had separated about 14 months earlier, and Ricky's contact with his father was only sporadic. Mrs. Smith described Ricky as a "fussy" child prior to the separation, but hinted that intense marital conflict may have triggered his more severe behavior. Following the separation, for example, Ricky had started first grade and seemed completely uninterested in school. He was sent home once for fighting and was disciplined several times for taunting other children. Mrs. Smith said Ricky's problems had grown worse over the past 14 months, especially since she was not able to supervise her son as much as

before. Mrs. Smith described Ricky's relationship with his older sister as positive but said the teenager could do little to influence Ricky's behavior.

Permission was granted to speak with school officials about Ricky. Ricky's teacher, Mrs. Candler, reported that her student was becoming less manageable than he had been at the beginning of school 2 months before. Initially, Ricky was somewhat withdrawn, but as he became more familiar with the classroom, his behavior became more difficult. He averaged about three severe tantrums per week, each of which consisted of a 20- to 30-minute tirade about people picking on him, his inability to understand the classroom assignments, and wanting to die. On most occasions, Ricky was ignored and was able to compose himself. On other occasions, however, his acting-out behaviors were severe enough to have him sent to the principal's office for supervision the rest of the day.

Mrs. Candler added that Ricky's academic performance was below average but not failing. He appeared to understand and complete his reading and math assignments when motivated to do so, but his attention was sporadic and insufficient. Ricky seemed to pay closer attention when an assignment or method of teaching was relatively new, but he was easily distracted soon afterward. In recent weeks, Ricky was getting out of his seat more and more, requiring a constant response. Mrs. Candler was unsure whether this behavior was intentional and attention-seeking, or uncontrollable. She also indicated that Ricky responded best to individualized attention and structure but that the curriculum didn't allow for much one-on-one instruction. Mrs. Candler suggested that Ricky be evaluated for special education.

A discussion with the school psychologist, Mrs. Dee, revealed that Ricky's tested intelligence level was in the normal range. In addition, his overall level of tested achievement, while low, was not more than two standard deviations from his intelligence test score. A diagnosis of learning disorder was thus deferred. Ricky's greatest problem was paying attention to extended tasks. In addition, his interpersonal relationships with his classmates were somewhat distant, but he was not unpopular. In fact, he excelled during physical education class and was one of the more popular children there. Mrs. Dee felt that Ricky did not belong in special education but did require some behavior modification or medical program to control his disruptive behaviors. On a preliminary basis, the intern diagnosed Ricky with attention deficit/hyperactivity disorder (ADHD) of the predominantly inattentive type.



Assessment



According to the *DSM-IV*, the essential feature of attention deficit/hyperactivity disorder is a "persistent pattern of inattention and/or hyperactivity/impulsivity that is more frequent and severe than is typically observed

in individuals at a comparable level of development" (APA, 1994, p. 78). Symptoms of ADHD may include the following:

- Inattention
- Not following through on instructions
- Avoiding tasks that require sustained mental effort
- Losing things
- Distractibility
- Forgetfulness
- Fidgeting
- Leaving one's seat
- Running or climbing about
- Excessive talking
- Difficulty waiting
- Interrupting others

These symptoms must be evident much more so than one would normally expect in a youngster. For a diagnosis to be given, some interfering symptoms must be present before the age of 7 years, the symptoms must be shown in two or more settings, and a significant impairment in functioning must be present. Subtypes include predominantly inattentive, predominantly hyperactive-impulsive, and combined. Although the latter two types appear to be valid, the inattentive type remains controversial (Barkley, 1996).

As mentioned, the clinical psychology intern who evaluated Ricky had arrived at a preliminary diagnosis of attention deficit/hyperactivity disorder, predominantly inattentive type. He based this on knowing that, over the past several months, Ricky had failed to pay close attention to his schoolwork, had difficulty sustaining attention to work tasks, was quite disorganized, often lost school items, and was typically distracted and forgetful. In addition, Ricky sometimes, though not often, failed to understand what others said to him. This latter symptom occurred mostly with his mother, however.

The clinical psychology intern also determined that Ricky's symptoms affected his test scores and grades, and that some of his symptoms (e.g., being distracted, failing to sustain attention) were present before the age of 7 years and before his parents separated. Also, impairment in three different settings was noted: school, home, and religious education classes at church. Each of these presenting problems supported the diagnosis of ADHD, inattentive type.

Ricky was *not* diagnosed with attention deficit/hyperactivity disorder of the hyperactive-impulsive or combined type because his other symptoms did not occur with sufficient frequency or severity. For example, Ricky did fidget and run about, but these behaviors were not considered outside the range of normal 7-year-old male behavior. In addition, Ricky

often left his seat at school and home, but the presence of just one symptom does not warrant a diagnosis of ADHD, hyperactive-impulsive type.

In cases of possible ADHD, medical conditions should be ruled out first. The classic symptoms of ADHD—inattention, hyperactivity, and impulsivity—are sometimes caused by neurological, sensory, metabolic, skin, and/or tic disorders (Waslick & Greenhill, 1997). Knowledge of these, especially the latter, is important when deciding whether stimulant medication should be used. In Ricky's case, none of these conditions was present, although Ricky's mother later revealed a past history of moderate alcohol use. Mrs. Smith did drink alcohol during Ricky's prenatal period of development; therefore, signs of fetal alcohol syndrome may have been manifested. Possible signs in Ricky included agitation, moderate impulsivity, and failure to focus or sustain attention fully. However, as noted earlier, Ricky had no intellectual deficits, which are common to those with fetal alcohol syndrome. Thus, it was unclear as to whether fetal alcohol syndrome was relevant to this case.

Mrs. Smith's alcohol use had also helped trigger her marital separation, but an assessment indicated no impairments at this time in her occupational functioning or parental obligations. Still, during the course of Ricky's treatment, the intern suggested to Mrs. Smith that she pursue individual therapy for her alcohol use. However, these suggestions were rebuffed.

Following an inconclusive medical examination, the clinical intern focused his assessment on multiple sources regarding Ricky's behavior in different settings. This is a necessity for a complex disorder like ADHD and involves interviews, rating scales, and behavioral observations, among other techniques.

During parent interviews regarding a child with possible ADHD, interviewers should focus on marital problems, stressful life events, family functioning, and parent complaints, attitudes, and possible psychopathology. In addition, they should explore the child's developmental history and current problems at length, especially "motor, language, intellectual, thinking, academic, emotional, and social functioning" (Barkley, 1997a, p. 91). Finally, and perhaps most important, adult interviews should focus on parent-child and teacher-child interactions. In Ricky's case, significant family factors may have been exacerbating his behavior. The intern therefore concentrated on the possible negative effects of his parents' conflict, separation, and alcohol use.

Interviewing a child with possible ADHD is also important, but be aware that children with ADHD often don't show their symptoms in a novel environment. In Ricky's case, this was particularly true; he showed self-control and was even reserved during his initial interview. In addition, Ricky's teacher had reported that her student paid closer attention to new teaching methods or assignments. Over time, however, as habituation

occurs, inattention and hyperactivity tend to resurface with these children. Indeed, in Ricky's case, his classroom behavior had gotten worse since September, and he became more difficult to interact with as therapy progressed.

Initial interviews with a child with possible ADHD should concentrate on the child's perceptions of his or her behavior, interpersonal relationships, and school performance. However, interviews with young children regarding these topics are sometimes unreliable. In Ricky's case, for example, he was quite confused about all the problems he was facing and was unsure about the quantity and quality of his interpersonal relationships at school.

Teacher interviews are critical for this population as well and should concentrate on the antecedents and consequences of the child's behavior. Such information is important for knowing why certain behaviors among these children are maintained over time. Mrs. Candler did not have a great deal of information as to what maintained Ricky's behavior, but she did say he responded best to one-on-one attention.

Rating scales may also be helpful for identifying ADHD problems. The Child Behavior Checklist (CBCL) and Teacher's Report Form (Achenbach, 1991a, 1991b), Conners Parent and Teacher Rating Scales (Conners, 1991), Home and School Situations Questionnaires (Barkley, 1990, 1997b), and Self-Control Rating Scale (Kendall & Wilcox, 1979) are particularly useful in this regard. In Ricky's case, Mrs. Smith completed the CBCL and gave her son high ratings for thought and attention problems. Key items included concentration difficulties, trouble sitting still, and confusion. Tests for inattention, such as a continuous performance test (e.g., Conners, 1995), are also useful for children with ADHD. However, these tests were not conducted in Ricky's case.

A direct behavioral observation is indispensable for assessing children with possible ADHD to (1) evaluate behavior in academic and natural settings, and (2) confirm that ADHD symptoms are present in two or more settings. The intern's observation of Ricky in class and at home largely confirmed previous teacher and parent reports. In addition, the intern found that Ricky initiated and received a lot of social contacts from his peers, more so than reported by anyone during the interviews.

Finally, in assessing a child with possible ADHD, one should certainly try to rule out other possible disorders. For example, ADHD may be misdiagnosed because other conditions like oppositional defiant or conduct disorder, learning or mild developmental disability, or general disruptive behavior are misinterpreted as ADHD. In addition, many of these disorders are comorbid with ADHD, further complicating assessment and diagnosis. To distinguish these disorders, close attention should be paid to general intellectual and adaptive behavior functioning, academic performance, aggression and hostility, quality of interpersonal relationships, social

skills, judgment skills, and the classic symptoms of ADHD. In Ricky's case, ADHD was considered the best diagnosis given his normal intellectual functioning, passing grades, nonaggressive interpersonal functioning, and classic ADHD, inattentive-type symptoms.

Causes and Maintaining Variables

Several variables, especially biological ones, likely work in tandem to cause ADHD in children. Because this population was thought for several decades to have poor motor coordination and "minimal brain dysfunction," many have concentrated on possible neurological deficits in these children. For example, children with ADHD appear to have some asymmetry in certain areas of the brain. In particular, abnormalities of the frontal lobe have been implicated because this area is associated with inhibition, thinking, reasoning, concentration, attention, expressive language, and motor control. Indeed, some studies have found less blood flow and metabolic activity in the frontal lobe (Zametkin et al., 1993). Children with ADHD also tend to have a smaller left caudate nucleus (Hynd et al., 1993), which is partially responsible for voluntary movement. However, brain differences likely account for only a fraction of those with ADHD, and the causes of these differences remain unclear.

Other unusual neurological patterns have been noted in this population as well. Children with ADHD tend to have smaller amplitudes in evoked response patterns when responding to tasks that require vigilance and sustained attention (Klorman, Salzman, & Borgstedt, 1988). Electroencephalogram (EEG) studies also indicate that children with ADHD show less general arousal than children without ADHD. These data indicate, only on a preliminary basis however, that children with ADHD are underaroused or underresponsive to tasks commonly seen in school. An interesting observation is that the use of stimulant medications like Ritalin increases such arousal and serves to alleviate many ADHD symptoms (Werry & Aman, 1993).

No formal neurological testing was performed on Ricky but, as mentioned earlier, he did maintain his attention better in situations involving new and possibly more arousing stimuli (e.g., a new science assignment). The clinical psychology intern also speculated that prenatal problems created brain changes in Ricky. However, this was never confirmed.

Physical problems of early childhood have been linked to ADHD as well, including meningitis, thyroid problems, otitis media (chronic ear infections), and sensory impairments (especially hearing loss). Contrary to popular belief, however, diet, sugar, and allergies have little if anything to

do with ADHD symptoms. Lead toxicity is more pertinent to the onset of ADHD and is especially problematic in urban areas with high concentrations of automobiles, lead in the drinking water, and industrial pollution. Although Ricky did live in a poor area, it was largely rural and these issues did not seem to be a factor in his case.

Evidence for a genetic component to ADHD includes findings that ADHD (1) runs in families, (2) is more prevalent in identical than fraternal twins, and (3) is more prevalent in biological than adoptive parents of children with ADHD (Stevenson, 1992). In addition, relatives of children with ADHD have higher rates of psychopathology compared to the general population. However, because many children with ADHD, like Ricky, have no relatives with ADHD, some have suggested that ADHD has familial and nonfamilial types (e.g., Sprich-Buckminster, Biederman, Milberger, Faraone, & Lehman, 1993). In other words, some types of ADHD may be influenced more by genetic factors, whereas other types may be influenced more by environmental factors.

In Ricky's case, the causes of his ADHD symptoms were never clearly established (as is the case for most children with ADHD). However, Mrs. Smith, as mentioned earlier, did drink significant amounts of alcohol during Ricky's prenatal period. Ingestion of alcohol and tobacco during pregnancy can lead to different symptoms that mirror ADHD, especially inattention (Ricky's predominant ADHD type). In addition, Mrs. Smith reported that Ricky's delivery was difficult. Although no further information was gathered about this, it is possible that Ricky's birth complications and later symptoms of ADHD were related. Complications at birth include anoxia and hemorrhaging, among others.

Overall, different biological factors likely account for most of the variance in explaining the cause of ADHD. Whatever the etiological pathway, however, the end result is a core deficit in response inhibition (Barkley, 1997c) or a person's ability to stop his or her own behavior. This deficit may then lead to other characteristics of children with ADHD, including poor self-regulation, memory, rule-governed behavior, problem solving, persistence, and motor and emotional control (Barkley, 1997c).

Biological factors are thus important in explaining the cause of ADHD. However, environmental variables likely play a substantial role in maintaining ADHD symptoms over time and influencing eventual outcome. The most significant of these environmental variables involve parent-child and teacher-child interactions.

Several parent behaviors are key to controlling, or failing to control, ADHD behavior. Many of these children, as noted, have difficulty paying attention to or comprehending parent commands. Some parents, including Mrs. Smith, consider this behavior to be deliberate noncompliance or vindictiveness. As a result, strong physical punishment is sometimes administered, but this often exacerbates the problem. On the other hand,

some parents will acquiesce to their child and his or her ADHD behaviors, administer over-the-counter medication to control the behaviors, or placate the child by letting him or her watch television or play videogames for long periods of time. These strategies generally fail in the long run, however. Parents who provide structure, feedback, and consistent and appropriate discipline for misbehavior or poor schoolwork will achieve better control over their child's ADHD behaviors than those who do not. Treatment plans for children with ADHD must therefore include extensive parental education and involvement in therapy.

Similar conditions apply to teacher behaviors toward a child with ADHD. In general, teachers must pay close attention to children with ADHD or risk letting their classroom deteriorate into chaos. However, a teacher may overattend to a child with ADHD, possibly reinforcing the child's behavior or depriving the child of social interactions with peers. Conversely, teachers who provide structured education, frequent feedback on academic and social behavior, and consistent discipline tend to influence more positively a child with ADHD. Therefore, any treatment plan for children with ADHD must involve extensive consultation and cooperation with teachers and must include their input as to what can feasibly be done in the classroom.



Developmental Aspects



Many researchers have charted the developmental aspects of children with ADHD, and a general course of the disorder has been identified. Much of this developmental research has focused on five growth periods: infancy and toddlerhood, preschool, childhood, adolescence, and adulthood. Little information is available regarding the infancy and toddlerhood period (0–2 years), although many babies who eventually develop ADHD are retroactively described as temperamental. Sometimes, these babies show erratic eating and sleeping patterns, irritability, resistance to regular routines, mood swings, and unpredictability (Ross & Ross, 1982). In Ricky's case, Mrs. Smith initially said her son was "fussy" during his first few years of life. She also reported that Ricky sometimes resisted being held, crawled all over the house, and was overly curious about things potentially dangerous to him (e.g., poisonous cleaners). It remained unclear, however, whether Ricky's early behaviors were "hyperactive" or fairly normal for a 2-year-old.

In the preschool period (ages 3–5), children who eventually develop ADHD have symptoms more characteristic of the disorder. Usually, the most noticeable symptoms are those related to hyperactivity and impulsivity. Specifically, these children begin to "get into everything," become more difficult to control, and show erratic patterns of behavior. In addi-

tion, they leave their seats more often than their peers, become excessively vocal and verbal, and disrupt others' activities (Campbell, Schliefer, & Weiss, 1978). In Ricky's case, Mrs. Smith described her son as "rambunctious" but was unsure that his behavior was beyond that normally expected from a 3- to 4-year-old. She did report that Ricky was extremely curious about things, in particular things he'd never seen before. This seemed consistent with Ricky's current behavior; he tended to pay closest attention to stimuli that were newest to him.

Preschool children who eventually develop ADHD also tend to be more noncompliant and aggressive than most children their age. In fact, some symptoms characteristic of oppositional defiant and conduct disorder may begin to appear. These include excessive arguing, sharp and short temper, willfulness, verbal and physical aggression, and negative affect. Mrs. Smith reported that Ricky was not generally aggressive toward others and, in fact, was well liked by most kids in his neighborhood. However, she did say her son was often insistent about having things done his way. If Ricky didn't get his way, for example, he would often run around the house and scream. Still, none of Ricky's symptoms was severe enough to qualify him for a diagnosis of ADHD, hyperactive-impulsive type.

The preschool period for these youngsters is also marked by greater emotional reactivity to events surrounding the child. For example, these kids tend to get more upset than their peers about things that bother them. In addition, they tend to *stay* upset for longer periods of time. Although many ADHD symptoms characteristic of the preschool period did not apply to Ricky, he *was* emotionally reactive. Mrs. Smith said her son would get upset "at the drop of a hat" and that the family often felt they were "walking on eggshells around Ricky." Apparently, Ricky would throw a tantrum if something made him nervous or if he didn't get his way. This was true especially if he was deprived of something new. In addition, Ricky's tantrums would sometimes last up to 2 hours, even for something as minor as not being allowed to watch television. Mrs. Smith said that Ricky's behavior in this regard had not changed much since preschool.

Finally, the preschool period for a child who eventually develops ADHD is sometimes marked by intense parent-child conflict. Some of this conflict arises from the child's chronic inattention to parent commands, which the parent often construes as noncompliance. Although sometimes difficult to tease out, Ricky's behavior was more inattentive than noncompliant. His mother reported that, when she knew she had Ricky's undivided attention, he would listen to her and carry out his assigned task. However, Ricky fought a lot with his mother when he didn't understand what she was saying. As an aside, Mrs. Smith said she couldn't understand why her daughter had grown to be such a responsible and compliant person while at the same time her son was persistently irresponsible.

During the school-age period (6 to 12 years), ADHD symptoms become full-blown as school and social demands increase expectations for appropriate behavior and provide more opportunities for failure. In cases where inattention is the primary problem, as with Ricky, goal direction becomes especially problematic. In addition, problems are chronically evident in work completion, organization, concentration, memory, planning, and social commitments (Barkley, 1996). About half these children also remain defiant and hostile throughout childhood. Self-regulation deficits appear as well and may lead to problems in self-care, completion of chores, social skills, and timeliness (Barkley, 1996). Ricky himself showed many of these problems, although his social skills were not too disturbed.

In adolescence, less severe symptoms of inattention, hyperactivity, and impulsivity are seen. However, these symptoms are still more problematic than those found in the general population. In addition, adolescents with ADHD show more academic problems, antisocial behavior, immaturity, and lower self-esteem than their peers (Hechtman, 1996b). Up to 80% still qualify for a diagnosis of ADHD (Cantwell & Baker, 1989). According to Barkley (1996), the major predictors of ADHD that persist into adolescence include comorbid oppositional behavior or conduct disorder, poor social skills, parent-child conflict and family dysfunction, shorter treatment length, and depression in the child's mother (which presumably interferes with appropriate parenting). Because Ricky had fairly good social skills and was receiving treatment at an early age, his prognosis for adolescence was considered to be good compared to that of other children with ADHD.

Less is known regarding the persistence of ADHD into adulthood, but possibly 30% to 50% of this population continue to show characteristic symptoms as adults (Barkley, 1996). This may be especially so for inattention. In addition, adults who had ADHD in childhood are more likely to show current substance abuse and antisocial or criminal behavior (e.g., Farrington, 1990). Other adult consequences of ADHD include less education, low self-esteem, poor social skills, and suicide attempts (e.g., Weiss, Hechtman, Milroy, & Perlman, 1985). However, note that there is great variability in this population; not everyone with childhood ADHD necessarily develops problems in adulthood. Indeed, other factors like a supportive family environment may enhance positive long-term outcome (Herrero, Hechtman, & Weiss, 1994).



Treatment



Treatment for youngsters with ADHD often involves a multicomponent approach with an emphasis on medication and behavior modification. As mentioned earlier, children with ADHD may be biologically undera-