

## **Attention-Deficit Hyperactivity Disorder: The Medicalization of Misbehavior**

**H. Russell Searight<sup>1,2</sup> and A. Lesley McLaren<sup>1</sup>**

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*During the past decade, there has been an increase in the diagnosis and treatment of Attention-Deficit Hyperactivity Disorder (ADHD). This syndrome, typically diagnosed in childhood, is characterized by inattention, hyperactive motor behavior, and distractibility. Current prevalence rates obtained in various countries generally exceed the 3–5% reported by DSM-IV. Reasons for increased ADHD prevalence include changes in diagnostic standards, overlap between ADHD and other externalizing disorders, nonspecific behavioral criteria, and the rapid effects of stimulant medication on cognitive functioning. However, social, cultural, and economic factors may also contribute to increased diagnosis. ADHD has become a common topic in the lay media. Popular discussions of ADHD may serve as a metaphoric expression of social anxieties, particularly with respect to children. At the same time, ADHD has rapidly become incorporated into a medical model, with emphasis on pharmacological treatment. Reductions in mental health and educational services, as well as economic pressures of managed care, may also contribute to medicalization of behavioral problems. Collaboration between psychologists and primary care physicians can lead to more accurate diagnosis and appropriate treatment of ADHD and related disorders.*

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<sup>1</sup>Department of Family Medicine, Deaconess Health System and Saint Louis University, 6150 Oakland Avenue, St. Louis, Missouri 63139.

<sup>2</sup>To whom correspondence should be addressed.

## INTRODUCTION

Attention-Deficit Hyperactivity Disorder (ADHD) is a mental health condition affecting 3 to 10% of school-aged children in the United States (American Psychiatric Association [APA], 1994; Richters *et al.*, 1995). The most widely accepted definition of ADHD is provided by the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* (DSM-IV). The DSM-IV criteria for ADHD include a 6-month period of inattention and/or hyperactivity-impulsivity that is maladaptive and inconsistent with normal development (APA, 1994).

In the past decade, ADHD has been diagnosed and treated with rapidly increased frequency (U.S. Drug Enforcement Agency, 1995). The disorder is now one of the most common diagnosed in pediatric mental health settings, and accounts for about 30% of new mental health referrals (Popper, 1988). ADHD has also captured popular attention, and has been featured in *Time* and *Newsweek*, in addition to being a frequent television talk-show topic. *Driven to Distraction* (Hallowell & Ratey, 1994), a book for lay audiences, has been a long-term popular best-seller. A recent scholarly article on adult ADHD featured a quotation by a psychiatrist who stated that the disorder was the most common self-diagnosed condition in his practice (Schaffer, 1994).

The purpose of this article is to examine critically the diagnosis of ADHD, its pharmacotherapy, and possible reasons for this increase in diagnosis and treatment. A number of studies have established ADHD's validity as a psychiatric syndrome (Goldman, Genel, Bezman, & Slantzev, 1998; Lahey *et al.*, 1994). However, there is growing concern about the inappropriate application of the diagnosis (Diller, 1996; U.S. Drug Enforcement Agency, 1995), including using the patient's response to stimulant medication to verify or refute the diagnosis (Goldman *et al.*, 1998).

Although there is agreement that the disorder includes inattention and hyperactivity, ADHD's boundaries remain unclear. The disorder has been variously defined, which has led to fluctuations in its prevalence. There appears to be considerable overlap between ADHD and several other childhood psychiatric diagnoses. In addition, the issue of comorbidity obscures the syndrome's defining features. The rapid benefit of stimulant medication on cognitive functioning may also inadvertently lead to inappropriate diagnosis. These clinical issues are likely to interact with social forces that are contributing to increased interest in the disorder. The competitiveness of U.S. society occurs simultaneously with a thrust towards streamlining education and health care. A growing technological emphasis has resulted in medicalization of nonclinical symptoms and distress (Barsky & Borus, 1995). This pattern of redefining social deficits and personal dis-

comfort into medical diagnoses that are treated pharmacologically has become a significant trend in the past two decades (Barkley, 1988; Barkley & Borus, 1995).

### HISTORY AND OVERVIEW OF ADHD

ADHD is the current diagnostic label for a syndrome initially labeled "brain damage syndrome" by the physician Still in 1902. "Still's disease," as it was popularly known, was characterized by impairment in moral reasoning and impulse control (Still, 1902; Walters & Barrett, 1993). In 1937, Bradley used dextroamphetamine to treat children with brain dysfunctions, usually attributed to perinatal or neonatal complications. Bradley (1937) later described a hyperactivity syndrome involving inattention, poor memory, and disinhibition. Subtle central nervous system (CNS) injury as the etiology of this behavioral syndrome predominated throughout the 1960s, typified by the label "minimal brain dysfunction." While hyperactivity continued to be an important feature of this disorder, clinical investigators in the 1970s began to emphasize inattention as a core deficit. DSM-III, published in 1980, used the label "Attention Deficit Disorder" to describe a syndrome with onset before age 7 and with hyperactivity as one possible feature. The revision of DSM-III (DSM-III-R, APA, 1987), renamed the syndrome Attention-Deficit Hyperactivity Disorder and gave greater emphasis to hyperactivity.

ADHD often coexists with other psychiatric disorders. Conduct Disorder, characterized by failure to obey social rules, is present in 20–30% of ADHD children, while Oppositional Defiant Disorder, featuring negativistic and noncompliant behavior, is present in up to 65% of cases (Barkley, 1990). Comorbidity remains high in adolescence, with 30% of ADHD teenagers exhibiting Conduct Disorder and 40–60% diagnosed with Oppositional Defiant Disorder (Barkley, 1990; Richters *et al.*, 1996). Learning disabilities occur in an estimated 20% of ADHD children (Barkley, 1990). Anxiety and mood disorders are found in about 10–15% of these children (Richters *et al.*, 1996).

Until relatively recently, many clinical investigators believed that ADHD symptoms remitted during the developmental transition to adolescence. During the past decade, it has been found that up to 70% of children with ADHD continue to manifest symptoms as adolescents (Wender, 1995). While pronounced hyperactivity declines with puberty, difficulties with attention, concentration, and restlessness persist (Weiss & Hechtman, 1993). There have been several recently completed longitudinal studies of ADHD in adults (Manuzza, Klein, Bessler, Malloy, & LaPadula, 1993; Weiss &

Hechtman, 1993). While methodological issues limit interpretation of study findings, it is estimated that about 50% of ADHD children continue to have psychiatric symptoms in adulthood (Wender, 1995). Thus, the disorder appears to exert effects throughout the life-span.

By the late 1970s, the use of stimulant medication to treat this syndrome became a standard. The most common stimulants for ADHD—methylphenidate and dextroamphetamine—are short-acting medications which yield behavioral improvement in an average of 70% of diagnosed children (Spencer *et al.*, 1996). The rapid mode of therapeutic activity has made methylphenidate preferable to the other medications used for treating the disorder, including antidepressants and antihypertensive agents. Over the past 10 years, the diagnosis of ADHD and stimulant treatment have become intertwined. In the United States, methylphenidate production increased sixfold between 1990 and 1995, with 85–90% of methylphenidate prescribed for ADHD (U.S. Drug Enforcement Administration, 1995).

Research conducted over the past 10 years has supported the existence of at least two, and often three forms of the disorder (Lahey *et al.*, 1994). ADHD-predominantly inattentive type is characterized by impaired concentration, disorganization, and short-term memory deficits (Barkley, 1997). Pronounced impulsivity combined with disinhibition and elevated motor activity predominate in ADHD-hyperactive type. A third, ADHD subtype—ADHD combined—includes symptoms of both hyperactivity and inattention. There is growing evidence that the inattentive type may be a unique disorder rather than an alternative ADHD subtype (Barkley, 1997).

### PREVALENCE RATES

The prevalence rates of ADHD have varied and have generally increased over time. Prevalence rates of ADHD will be influenced by the disorder's definition, as well as the source of information about symptoms. DSM-IV indicates that about 3–5% of school-aged children exhibit ADHD, with an estimated male to female ratio ranging from 4–9:1 (APA, 1994). The current DSM-IV estimate is lower than prevalence rates obtained in many investigations. The Ontario Child Health Study (Szatmari, Offord, & Boyle, 1988) included data on over 2,700 children screened for ADHD. An overall prevalence of 6.3% was obtained with 9.0% of boys and 3.3% of girls receiving the diagnosis.

In a review of ADHD cross-culturally, Taylor (1987) concluded that population base rates of core symptoms were fairly consistent across countries. However, at the same time, there was considerable cross-national variability in diagnosing ADHD in clinical and school settings. For example,

ADHD was 20 times more likely to be diagnosed in the United States than in the United Kingdom (Taylor, 1987). Since Taylor's review, there have been several studies finding significantly higher prevalence rates outside the United States. Baumgaertel, Wolraich, and Dietrich (1995) found that 18.7% of German elementary school children met DSM-IV ADHD criteria based on teacher's ratings. In an Italian elementary school study, ADHD was present in an estimated 3.9% of children rated by teachers. An additional 6.9% were rated as "possible cases" of the disorder (Galluci *et al.*, 1993). Similar rates (5–8%) of hyperactivity have been reported for children in mainland China (Shen, Wong, & Yang, 1985). However, the gender ratio in the Chinese sample was about 7:1 with 10% of the sampled boys meeting diagnostic criteria (Shen *et al.*, 1985). A Japanese investigation relying on parent ratings found an overall ADHD prevalence rate of 7.7% (Kanbayashi, Nakata, Fuji, Kita, & Wada, 1994). Boys and younger children were more likely to meet ADHD criteria. For example, 12.6% and 10.1% of 4- to 6-year-old boys and girls, respectively scored above the cutoff. At ages 7 to 9, comparable figures were 13.7% and 2.5%, respectively (Kanbayashi *et al.*, 1994). A study of a pediatric clinic in India found an overall rate of DSM-III Attention-Deficit Disorder with Hyperactivity (ADDH) of 11.2% with 15.7% of boys and 4.1% of girls exhibiting the disorder. Rates for older children were particularly high with 27.2% of 9- to 10-year-olds and 29.2% of 11- to 12-year-olds diagnosed with ADDH, based on combined interview rating scales and testing (Bhatia, Nigam, Dohra, & Malik, 1991).

Cross-national prevalence differences may reflect varying diagnostic criteria, differential impact of comorbid externalizing disorders, instrumentation, and cultural norms regarding acceptable behavior (Sergeant & Steinhauser, 1992). There is indirect support for the cultural variation hypothesis. Northern European prevalence rates appear higher than found in Southern Europe. This difference has been attributed to greater tolerance for "boisterous" behavior in the southern region (Sergeant & Steinhauser, 1992). These variations may guide mental health professionals' perceptions of normality. When rating a standardized videotape of an 8-year-old boy, Chinese and Indonesian mental health professionals rated more hyperactive and disruptive behavior than Japanese and American observers (Mann *et al.*, 1992).

An indirect source of longitudinal prevalence data is from Baltimore County, Maryland. Since 1971, the county health department has maintained information about the number of school children receiving stimulant medication (Safer & Kragar, 1988, 1992b). Overall, from 1971 to 1993, medication treatment for ADHD in the Baltimore area increased from 1.07 to 3.58% (Safer & Kragar, 1994). Of interest is that, beginning in the 1990s,

students were on medication for longer periods. In 1975, of those being treated for ADHD only 11% were secondary school students; this figure rose to 30% in 1993 (Safer & Kragar, 1994).

Differing assessment methods, raters, and diagnostic criteria are likely contributors to some of the variability in prevalence. Clinic-based samples are likely to have elevated base rates of symptoms and lead to inflated population prevalence estimates. In addition, studies employing classroom behavioral ratings without rigorous application of DSM criteria have greater prevalence figures. More conservative estimates are usually associated with the requirement that multiple, rather than single, data sources are indicative of the diagnosis.

### THEORIES OF ETIOLOGY

Early descriptions of ADHD suggested neurological dysfunction as an etiology with the term "minimal brain dysfunction." This terminology became less prominent during the 1980s with more emphasis on descriptive diagnosis rather than establishing causal factors. However, recently, both neuropsychological and neurophysiological explanations for the disorder have been presented.

Barkley (1997) recently described a model for ADHD emphasizing a core deficit in behavioral inhibition as well as accompanying weaknesses in interrupting or ceasing an ongoing response pattern. These cognitive and meta-cognitive weaknesses are linked to the orbital frontal brain (involved in behavioral inhibition) and dorsolateral prefrontal (involved in working memory) regions.

Quay (1997) suggests that, functionally, ADHD is based upon an underactive behavioral inhibition system (BIS). The BIS typically responds to conditioned punishing stimuli by reducing output as well as focusing attention on environmental cues relevant to avoidance and extinction. In ADHD, this system does not function normally so that environmental feedback does not result in cessation of responses that are not rewarded or punished. Anatomically, this system is located in the brain's septohippocampal area and, in its connections, to the frontal cortex. Quay presented laboratory studies of ADHD children's response styles, brain magnetic resonance imaging (MRI) patterns, and responses to methylphenidate in support of his theory. For example, MRI studies have found that ADHD children have a smaller corpus callosum in the rostrum and rostral body; the size of these structures was significantly correlated with Conner's ratings of impulsivity and hyperactivity (Giedd *et al.*, 1994).

Using emission computed tomography, Lou, Henriksen, Bouhn, and Nielsen (1989) examined cerebral blood flow among ADHD children. While the striatal regions were hypoperfused, primary sensory and sensorimotor regions were highly perfused. Methylphenidate administration appeared to increase striatal activity.

Although these neurophysiological and neuroanatomical findings are intriguing, there is no clear consensus about ADHD's etiology. The factor analytic findings indicating distinctiveness between attention and hyperactivity (Biederman *et al.*, 1997) suggest that the disorder may be multiply determined. However, there is general agreement that ADHD is a CNS disorder in which dopaminergic activity is disrupted.

### THE IMPACT OF CHANGING DIAGNOSTIC CRITERIA

As noted above, ADHD's definition has changed over the past 15 years. The American Psychiatric Association made a major conceptual shift from DSM-II to DSM-III by relying on specific, observable behaviors to diagnose most psychiatric disorders rather than syndromal descriptions. In DSM-III, Attention Deficit Disorder could be diagnosed with or without hyperactivity and the criteria consisted of three behavioral categories (inattention, impulsivity, and hyperactivity). Each category was defined by five or six behaviors with two or three necessary in each category to meet the threshold for diagnosis. In the DSM-III-R system, the categories were abandoned in favor of a single list of 14 symptoms, 8 of which are necessary to secure the diagnosis. The DSM-III-R also added the category of Attention-deficit disorder-Undifferentiated for individuals who previously were diagnosed with Attention Deficit Disorder without Hyperactivity. DSM-III-R gave slightly greater emphasis to impulsive and hyperactive behavior as compared with inattention. About two thirds of the 14 symptoms describe impulsive patterns (e.g., "often talks excessively," "often engages in physically dangerous activities without considering possible consequences") (APA, 1987, pp. 52-53). The currently employed system, DSM-IV, requires at least 6 of 9 symptoms of *either* inattention or hyperactivity/impulsivity, with a minimum 6-month duration. While the DSM-III-R symptom list implied that ADHD was a unitary disorder, DSM-IV clearly delineates three categorical subtypes (Inattentive, Hyperactive, Mixed) which is supported by factor analytic studies (Biederman *et al.*, 1997).

While all three DSM criteria sets require that symptoms be consistently present and cause impairment prior to age 7, DSM-IV also states that the symptoms "should not be better accounted for by another mental disorder" (p. 78). DSM-IV's discussion of differential diagnosis is limited.

It is noted that ADHD is not an appropriate diagnosis “if symptoms are better accounted for by another mental disorder” (p. 83). The clinician is also cautioned that ADHD may be difficult to differentiate from developmentally appropriate behavior, particularly among preschoolers.

One difficulty with DSM-IV’s atheoretical approach to ADHD is that the symptoms may arise from multiple conditions other than the presumed core features of disinhibition or inattention. In children and adolescents, Conduct Disorder, Oppositional Defiant Disorder, Learning Disabilities, and Mental Retardation—to name a few—may present with similar topographies of externalizing or noncompliant behavior.

The “inattention” dimension of ADHD is open to considerable interpretation. It consists of criteria such as “does not seem to listen,” “is often forgetful,” and “does not follow through on instructions.” While DSM-IV cautions that oppositional children or those with receptive language difficulties may exhibit these behaviors, the proximate cause is left to the parent or teacher to interpret. Thus, the clinician may encounter parents who, because of ADHD’s media attention, have an attribution bias towards the diagnosis and fail to consider alternate causes.

With each subsequent revision, the diagnostic criteria for ADHD have become broader—a wider net is cast for children exhibiting problem behaviors (Diller, 1996). Comparing the percentages of children rated or diagnosed with ADHD by the successive sets of criteria provides support for this expansive pattern. When DSM-III and DSM-III-R were compared, over 50% more children received an ADHD diagnosis under the revised system (Newcorn *et al.*, 1989). This increase was almost entirely attributable to children who were primarily hyperactive and impulsive, but who were not rated as highly inattentive. In contrast, a comparison of all three sets of diagnostic criteria applied to teacher ratings found a slight increase in the rates of diagnosis with DSM-III versus DSM-III-R criteria. However, when DSM-IV standards were employed, prevalence rates increased by 50–60% (Baumgaertel *et al.*, 1995). The major source of increased prevalence were ADHD children who were rated as predominantly inattentive with a smaller increase in those who were hyperactive. Of interest, only 43% of those diagnosed with the disorder by one set of DSM criteria received the diagnosis by the other two standards (Baumgaertel *et al.*, 1995).

Employing an archival data set based upon DSM-III-R criteria, Biederman *et al.* (1997) found a much higher rate of agreement between the two systems. In their sample of children referred to a pediatric psychopharmacology clinic, 93% diagnosed with DSM-III-R ADHD also met criteria for DSM-IV ADHD diagnosis.

The differences in agreement rates may be in part attributable to the distinct samples employed. Agreement rates between DSM-III-R and



DSM-IV may be much higher in mental health clinic samples than in unselected school settings. However, from a practical perspective, schools often employ behavioral ratings as a basis for referral to family physicians and pediatricians for ADHD pharmacotherapy.

### ADHD AS A CONTINUUM RATHER THAN A CATEGORY

Both DSM criteria and the majority of rating scales employed for ADHD reflect a continuum concept of ADHD. The DSM-IV behaviors are preceded by the word "often" as in "often talks out excessively" or "often has difficulty organizing tasks and activities." While rating scales such as the Conners (1969) form feature behaviors that occur "not at all," "pretty much," or "nearly all the time," these behaviors overlap with those of nonclinic children. Several studies have found that many ADHD symptoms occur in very high frequency in unselected populations. In an early investigation, teachers perceived 30% of boys as overactive, 40% as restless, and 43% as exhibiting a short attention span, with comparable figures for girls being slightly less than half of those for boys (Werry & Quay, 1971). A more recent study of boys yielded a similar pattern of school-age children frequently rated as impulsive and overactive. Based on DSM-III-R criteria, 24% of 5- and 6-year-old boys and 35% of 11- to 14-year-old boys were rated as exhibiting ADHD symptoms at least "pretty much" or "very much" of the time (Pelham, Gnagy, Greenslade, & Milich, 1992). However, when "very much" was used alone as the criterion of severity, prevalence rates for children under 8 were about 5-6% and about 8-8.5% for those 9-14 years old (Pelham *et al.*, 1992). Of the 14 ADHD behavioral rating items employed with a Japanese sample, 6 occurred in 20% or more of the children (Kanbayashi *et al.*, 1994). Among age and gender subgroups, ADHD behaviors occurred with very high frequency in this sample. For example, 47.7% of 7- to 9-year-old boys and at least 43% of 4- to 6-year-old boys and girls were rated as easily distracted. Between 30 and 44% of Japanese boys and girls ages 4 through 9 were perceived as frequently shifting from one uncompleted activity to another and as often talking excessively (Kanbayashi *et al.*, 1994).

The high frequency of ADHD behaviors in the general population contributes to ambiguity about the syndrome's presence or absence. The adoption of a categorical medical nosology for childhood behavior problems conflicts with the more continuous distribution of impulsivity and distractibility among nonclinical schoolchildren as well as increasingly among adolescents and adults. This issue extends to newly developed adult ADHD standards. Wender's (1995) Utah criteria for adult ADHD are writ-

ten in a DSM format. To obtain the adult diagnosis, there must be a history consistent with childhood ADHD if a formal diagnosis was not made in earlier development. As adults, there must be evidence of hyperactivity as exhibited through motor restlessness, fidgetiness, difficulty maintaining sedentary activity, and experiencing dysphoria when not active. In addition, adults with ADHD exhibit impaired concentration as inattention, forgetfulness, and distractibility. Besides a childhood ADHD history, as well as adult hyperactivity and inattentiveness, two of the following five characteristics must be present: affective lability, hot temper, inability to complete tasks/disorganization, stress intolerance, and hyperactivity (Wender, 1995). The childhood history of ADHD may be very difficult for adults to report reliably, and they are likely to be influenced by current self-perceptions of functioning. The Utah criteria include behaviors and experiences common to many "normal" adults. Under hyperactivity, Wender (1995) includes drumming fingers and "leaving the table immediately after a meal" (p. 126) while impaired concentration may be characterized by "often . . . misplacing . . . things (car keys, purse, wallet)" (p. 127). The remaining five characteristics also exist on a continuum with nonpathological behavior and are found among patients with mood, personality, and substance abuse disorders.

### COMORBIDITY AND DIFFERENTIAL DIAGNOSIS

Attention-Deficit Hyperactivity Disorder often appears along with other mental disorders. Learning disabilities, depression, and anxiety disorders frequently are comorbid with ADHD (Richters *et al.*, 1996). Of particular concern are the high prevalence rates of two other disruptive behavioral syndromes: Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD). The central features of CD include norm violation and infringement upon other's rights. ODD is characterized by an enduring pattern of negativistic, argumentative, and defiant behavior. Among a large sample of elementary school children, ADHD was a sole diagnosis in only 39% of those with the disorder. Of the 61% with comorbid disorders, 32% had ODD and 12% had CD (August, Realmuto, MacDonald, Nugent, & Crosby, 1996). August *et al.* (1996) also found that ODD and CD rarely occurred without ADHD also present. These comorbidity rates appear to increase 1.5–2 times in adolescence (Barkley, 1990).

Etiologically, ADHD is commonly viewed as a neurophysiological condition which is expressed behaviorally in varying degrees throughout the life-span. The presence of comorbid disorders may mimic or mask ADHD symptoms. In a 4-year follow-up of ADHD children, 15% demonstrated

remission of the disorder (Biederman *et al.*, 1996). Remission of ADHD was greater among children originally diagnosed with comorbid Conduct Disorder (25%), Major Depression (24%), and anxiety disorders (14%) (Biederman *et al.*, 1996). This perceived remission is likely to be at least partially attributable to the high degree of symptom overlap at the initial evaluation. The course and spontaneous remission rates of ADHD, CD, and ODD further confound the diagnostic picture. Hart, Lahey, Loeber, Applegate, and Frick (1995) found a greater incidence of symptom remission during a 4-year follow-up. Of ADHD children (initial mean age 9.4 years), 16% no longer met diagnostic criteria at 1-year follow-up with 23% failing to meet criteria at 4 years. Symptoms of impulsivity and hyperactivity were much less stable than inattention. Children with remission of ADHD were less likely to have comorbid CD (Hart *et al.*, 1995).

Investigators have found evidence for both convergence and divergence of symptoms of ADHD, CD, and ODD. When DSM-IV interviews with clinic patients were employed, there is evidence of specific criteria that are strongly and fairly uniquely predictive of an ODD, CD, and ADHD diagnosis. For example, the symptoms "runs around and climbs excessively" and "acts as if he or she were driven by a motor" were highly predictive of ADHD while "often bullies, threatens or intimidates others" was associated with CD, and "often is angry or resentful" predicted an ODD diagnosis (Frick *et al.*, 1994). Moreover, meta-analysis has distinguished oppositional behavior from aggressive and illegal acts (Frick *et al.*, 1993).

However, when teacher or parent behavioral ratings are employed to examine all three externalizing syndromes, clear diagnostic boundaries frequently break down. Based upon a combination of behavioral ratings, cognitive testing, and family context data, Paternite, Loney, and Roberts (1995) could not empirically separate ODD from comorbid ODD and ADHD. In fact, there were few reported behavioral differences between ODD and ADHD children (Paternite *et al.*, 1995). While ADHD has been conceptualized as a neurophysiological deficit, ODD is seen as arising from family interactions. However, no significant differences were evident between ODD and ADHD children on cognitive or family environment measures. Barkley (1997) noted that available research has not been able to clearly delineate deficits specific to ADHD and behaviors unique to related diagnoses such as CD. In a review of research, Hinshaw (1987) suggested that while ADHD stemmed from underlying cognitive deficits, CD was associated with social adversity and inconsistent parenting. While DSM-IV nosology separates ADHD, CD, and ODD, the high comorbidities suggest a broader spectrum of less specific externalizing behavior (Loney & Milich, 1982). There are other suggestions that CD, ODD, and ADHD are often not distinguishable. When children, teachers, and parents reports

were obtained, there was little convergence on ADHD symptoms (Hart, Lahey, Loeber, & Hanson, 1994). While the disparity was not as great, ODD symptoms varied substantially across respondents and were not consistently related to impairment criteria.

Factor analytic studies have also found both convergence and distinctiveness between ADHD, ODD, and CD (Fergusson, Horwood, and Lynskey, 1994a, 1994b). While research is still not entirely clear, the developmental course of ADHD appears to be strongly influenced by the presence or absence of comorbid CD or ODD (Barkley, 1990; Fergusson, Horwood, & Lynskey, 1993). For example, ADHD without ODD increases risk of later academic failure but not of antisocial actions (Fergusson *et al.*, 1994b). Early onset ODD is not associated with academic difficulties, but does predict later antisocial behavior (Fergusson *et al.*, 1993). While first-order factor analysis indicated distinctions between ODD, CD, and ADHD, second-order analyses found a common factor including both oppositional hyperactive behavior and attentional deficits with another factor reflecting antisocial actions (Fergusson *et al.*, 1994b).

While the causes of ADHD, CD, and ODD may differ, the similarities in behavioral topography may lead the public to group them together. Acting-out behavior may be seen as a global category by teachers and parents. The rapid efficacy and popular press surrounding methylphenidate often results in requests for medication treatment for children exhibiting predominantly Conduct Disorder or Oppositional-Defiant behavior. The efficacy of stimulants for aggressive and noncompliant behaviors is somewhat equivocal (Spencer *et al.*, 1996). While the antihypertensive clonidine has demonstrated some efficacy in reducing aggression (Schvehla, Mankoki, & Summer, 1994), medication is not usually considered to be a treatment-of-choice for ODD and CD.

## PHARMACOTHERAPY

Medication has become a mainstay of ADHD treatment. The most commonly employed drugs are stimulants such as methylphenidate, dextroamphetamine, and pemoline. In children and adults who do not tolerate stimulants, antidepressants and antihypertensives such as clonidine and guanfacine have some demonstrated efficacy (Spencer *et al.*, 1996). The preferred and most commonly employed pharmacotherapy is methylphenidate, marketed under the trade name, Ritalin.

Methylphenidate is a short-acting CNS stimulant with a half-life of about 4 hours. Methylphenidate has demonstrated short-term effects on behavioral ratings and laboratory measures assessing "on task" activity, ex-

cess motor movements, and classroom compliance (Richters *et al.*, 1995). Stimulants have also improved acquisition of both verbal and nonverbal material (Barkley, 1997; Spencer *et al.*, 1996), and have been associated with improved social functioning both with parents and peers (Barkley & Cunningham, 1979; Whalen, Henker, & Granger, 1990).

Methylphenidate appears to be less successful in reducing impulsive and aggressive behavior (Matier, Halperin, Shurma, Newcorn, & Suthay, 1992). While short-term performance on cognitive and academic tasks is improved, long-term methylphenidate treatment may not substantially improve academic achievement scores (Charles & Schain, 1981; Richters *et al.*, 1995).

The neurochemical pathways through which methylphenidate exerts its effects are not well known. Norepinephrine, as well as serotonin's release and reuptake are increased by stimulants (Elia, Rapoport, & Kirby, 1993). Previously, stimulants were believed to have a "paradoxical" effect on ADHD individuals. Thus, while normal persons were believed to respond to stimulants by hyperarousal and motor restlessness, these medications were seen as having an idiosyncratic "calming" effect on ADHD patients. While few recent studies compare stimulants' effects on nonclinical versus ADHD children or adults, several earlier experimental investigations found that stimulants produced similar cognitive and behavioral effects in normal and ADHD children (Rapoport *et al.*, 1978, 1980) as well as normal adults (Rapoport *et al.*, 1980). In a group of normal prepubertal boys, dextroamphetamine was associated with decreased reaction time and motor activity as well as improved performance on recall tasks (Rapoport *et al.*, 1978). Hyperactive and normal boys, as well as normal men, all demonstrated improved vigilance, short-term recall, and decreased motor activity in response to low doses of dextroamphetamine. Studies of methylphenidate with nondiagnosed children (Peloquin & Klorman, 1986); and adults (Brumaghim, Klorman, Strauss, Levine, & Goldstein, 1987) have found similar patterns of performance enhancement on memory and vigilance tasks. Peloquin and Klorman (1986) concluded that methylphenidate improves efficiency of stimulus evaluation and response processes in a similar manner as with ADHD children.

A thorough review of the literature failed to find recent studies involving stimulant administration to non-ADHD children—either in comparison to ADHD children or alone. The pattern of findings described by Rapoport *et al.* (1978, 1980) and others suggests that stimulants improve cognitive and motor functioning in normal children and adults. The dramatic rise in methylphenidate use in the United States raises concerns about the potential of these drugs for performance enhancement in large segments of the population. This "cosmetic psychopharmacology," whereby persons without a diagnosis benefit from psychoactive medication, has been described for the antidepressant, Prozac (Kramer, 1993). In addition, methylphenidate's effects

may obscure other clinical problems and prevent use of behavioral therapies (Goldman *et al.*, 1998). These experimental data raise serious doubts about the clinical practice of validating an ADHD diagnosis through a patient's positive response to stimulants (Goldman *et al.*, 1998).

### THE IMPACT OF POPULAR ATTENTION ON DIAGNOSIS

Popular media attention has made the public well aware of the existence of ADHD. The availability of information to the public has contributed to the evaluation and effective treatment of many ADHD children, adolescents, and adults. Knowledge of the disorder and the development of education/support groups such as Children and Adults with Attention Deficit Disorder (CHADD) has reduced the blame, frustration, and diminished self-esteem characterizing many families with ADHD members.

The public awareness has also contributed to a growing number of persons who present to physicians and mental health professionals with self-diagnosed ADHD or a diagnosis provided by a friend, schoolteacher, or family member. Recently, there have been several descriptive studies of clinical verification of a preexisting ADHD diagnosis. An inherent difficulty with this line of research is the absence of an agreed-upon "gold standard" to validate a preexisting diagnosis. Again, this is an issue with many mental health conditions, including Major Depression and Anxiety Disorders. However, the heavy reliance upon adult informants in diagnosing ADHD adds another layer of potential distortion.

Sabatino and Vance (1994) evaluated 75 previously diagnosed ADHD children who had been unresponsive to pharmacological or medical intervention. Based upon a thorough evaluation including family history, psychological, and academic testing, as well as behavioral ratings, one third of these children were re-diagnosed with a disorder other than ADHD. These alternative diagnoses included Learning Disabilities, Oppositional Defiant Disorder, and Conduct Disorder. The investigators raised particular concerns about the educators misinterpreting off-task classroom behavior stemming from information processing or receptive language deficits as symptomatic of ADHD (Sabatino & Vance, 1994).

A similar investigatory model was employed by Cotugno (1993) in a community mental health center. Over a 3-year period, 92 children diagnosed with ADHD by a physician or nonmedical mental health professional without benefit of a comprehensive evaluation were referred to the community mental health center's ADHD clinic. The clinic's specialty evaluation included medical, social, and family histories, as well as cognitive, academic, and personality testing and behavioral ratings. In only 22%

of the sample was ADHD the primary diagnosis given by the specialty team, with an additional 37% given ADHD as a secondary diagnosis. In this setting, mood disorders and anxiety disorders were the most common alternative diagnoses. In addition, the providers who had diagnosed the children previously appeared to rely upon limited developmental data and behavioral ratings (Cotugno, 1993).

While the studies noted above focus on children who were diagnosed by another professional, self-diagnosis was examined by DesGranges, DesGranges, and Karsky (1995). The authors described their experience with parents and children who presented at a mental health center with the diagnosis "established." These included a mother who brought her daughter to the clinic with a presenting problem of "I've been doing some reading and realize my child has ADD without hyperactivity" (DesGranges *et al.*, 1995, p. 5). The resulting evaluation indicated that the child's academic problems, poor memory, and social skill difficulties were attributable to mild cognitive impairment. Other patients who had been self-diagnosed were certain they needed methylphenidate. One child, later found to have Overanxious Disorder, began his evaluation by telling the clinician, "My teacher says if I don't get pills like Joey's, I'll have to take the grade over" (p. 5). Another family indicated that they did not have time to undergo an evaluation, but they would stop by to pick up Ritalin, since they were sure their child needed it (DesGranges *et al.*, 1995). In their study, case records of 375 patients initiating treatment during 1993 were examined. Of this original group, 119 focused on ADHD symptoms as the presenting problem. In only 38% of these cases was ADHD confirmed. A large percentage of those initially presenting with ADHD were diagnosed with Oppositional Defiant, Anxiety or Developmental Disorder. While these studies are descriptive, quasi-experimental, designs at best, they do address a common concern voiced by practitioners. Teacher and parental pressure to diagnose ADHD and initiate methylphenidate treatment is an experience common to many pediatricians and family physicians.

## ADHD AND THE EDUCATIONAL SYSTEM

### Increased Demands and Fewer Resources

Many have argued that American society has become increasingly competitive and that performance demands have grown. One benchmark of this trend is that when the norms for intellectual tests are revised, the mean score consistently creeps upward (Flynn, 1987). The "Flynn effect" describes an average IQ gain of about 3 points per decade (Flynn, 1987; Neisser *et al.*,

1996). Neisser and colleagues (1996) argue that the most likely cause of these IQ gains is the rapidly increasing complexity of modern life. Information's availability through various media, and the pace of urban life place increased demands on one's concentration and probably also contribute to an environment which taxes attention through multiple simultaneous stimuli.

Over the past half century, formal education has also become a prolonged and increasingly demanding process—often extending from age 2 until 30. Forty years ago, successful kindergarten completion did not require that a child demonstrate rudimentary reading and spelling skills. The advent of Head Start and the growing number of children in preschools with prescribed educational curricula has led to demands for academic rigor at a younger age (Diller, 1996). The increased numbers of children in early education programs exposes them to extrafamilial scrutiny. Many preschoolers exhibit the DSM-IV ADHD criteria—not because they have the syndrome, but because of developmental overlap between normal and “disordered” behavior.

Among many American families there is considerable academic pressure. Beginning in toddlerhood, many parents become concerned about whether children will be admitted to desirable schools. This preoccupation with academic achievement may contribute to using any “edge,” including pharmacotherapy, that will enhance short-term cognitive functioning. The “lean and mean nineties” (Diller, 1996) has led to decreased educational budgets for primary and secondary schools. The resulting increased class sizes and decreased staffing, coupled with legislative demands for educational rigor as demonstrated through standardized test scores, may contribute to reduced performance—particularly by marginal students (Diller, 1996). These students may in turn be referred for ADHD evaluations because of their academic difficulties. By medicalizing less than optimal academic performance and classroom behavior, treatment becomes the province of the physician rather than school boards or state legislatures.

### **ADHD and Special Education**

These economic realities and consumer needs have also affected availability of special education. Beginning with the implementation of Public Law 94-142 in 1978, appropriate special education services in the least restrictive environment were guaranteed to any disabled student. Public Law 94-142 expanded upon the previously established Section 504 of the Rehabilitation Act ending discrimination to persons with disabilities (Martin, Martin, & Terman, 1996). While Public Law 94-142 was a federal mandate, the primary burden for funding special education was at the state and local



level (Lewit & Baker, 1996). Special education costs about 2.3 times that of regular education (Parrish & Chambers, 1996). Since 1976, the number of children receiving special education services has increased by 45% (National Center for Educational Statistics, 1993). During the 1993–1994 academic year, 7.7% of all schoolchildren received special education assistance (Lewit & Baker, 1996). The increase is almost entirely attributable to children with specific learning disabilities. From 1988 through 1992, there was a significant increase from 4 million to 5 million children receiving services for learning disabilities. Learning-disabled children now account for half of the special education population.

There are two major categories of special education class: self-contained and resource room. Self-contained instruction is far more costly than resource room. Per pupil expenditure for a learning-disabled student in a self-contained class is \$3,083.00, and \$1,643.00 for a resource room placement (Parrish & Chambers, 1996). The heavy financial burden placed on states and municipalities for special education has led to pressure to reduce these services (Terman, Lamer, Stevenson, & Behrman, 1996). With rising demands and limited budgets, there is likely to be a rapidly increasing reliance on resource room placements rather than the costlier self-contained classrooms. Given the comorbidity of learning disabilities with ADHD (Lyon, 1996), as well as the similar behavioral symptoms exhibited by many learning-disabled pupils and ADHD children, it is likely that many students with learning problems are being referred for ADHD evaluations. A similar process may be occurring with Conduct Disordered and Oppositional Defiant children who usually fall into the “Emotionally Disturbed” or “Behavior Disordered” educational categories. A causal relationship between the increased number of learning-disabled students, the use of less intensive special education services such as resource rooms, and the rise in ADHD diagnosis and methylphenidate prescriptions cannot be established or even inferred. It is noteworthy that a large portion of children with symptoms of inattention and hyperactivity are referred by schools. It is also interesting that the time frame for increased learning-disability and ADHD diagnosis and treatment are roughly parallel.

## MANAGED HEALTH CARE

### Pragmatic Assessment and Treatment

Fiscal issues are not unique to the educational system. Similar budgetary strains have contributed to major changes in mental health services. There is considerable evidence that the majority of ADHD children are

diagnosed and treated by pediatricians and family physicians, with 75% of ADHD children being seen solely by primary care physicians (Zarin, Tanielian, Suarez, & Marcus, 1998). Physician diagnosis usually occurs without a psychological evaluation and is often based upon office observation alone (Wolraich *et al.*, 1990).

The increased reliance upon capitated health maintenance plans, in which primary care groups are paid a flat yearly fee per patient to manage medical care, provides disincentives for referral and consultation. It is likely that managed care pressures will further reduce the probability of seeking psychological evaluation prior to initiating medication treatment. Additionally, stimulant therapy, already the exclusive treatment for a large proportion of ADHD children, is likely to occur without adjunctive benefit of behavioral or psychoeducational intervention (Wolraich *et al.*, 1990). This trend is likely to occur despite the fact that most practitioners, in principle, support multimodal treatment (Goldman *et al.*, 1998; Searight, Nahlik, & Campbell, 1995) as well as systematic assessment with attention to learning disabilities and CD (Barbaressi, 1996; Goldman *et al.*, 1998).

Given the data indicating that methylphenidate often benefits non-ADHD individuals, the physician who prescribes stimulants for pediatric patients with any attentional or hyperactive symptoms is likely to see some improvement. This perceived benefit is likely to, in turn, provide confirmation to parents and the physician of the ADHD diagnosis. This pharmacological verification may be one factor contributing to the increased use of stimulants. While no studies exist to date on this issue, it is likely that these insurance and economic factors, together with the rapid efficacy of stimulant medication, contribute to clinicians having ADHD as a preferred diagnosis. The two other common externalizing syndromes—Conduct and Oppositional Defiant Disorder—require sustained behavioral intervention that is only likely to be successful with motivated caregivers (Barkley, 1990; Forehand & McMahon, 1981; Kratchowill & Morris, 1991). External forces may “push” the practitioner to seriously entertain an ADHD diagnosis because of relative treatability.

### **The Medicalization of Disruptive Behavior**

Medicalization occurs when medical diagnoses and treatments are applied to nondisease states (Barsky & Borus, 1995). Distress and deviance have progressively become medicalized in Western culture, such that discomfort which was previously tolerated has become symptom clusters deemed worthy of medical attention (Barsky, 1988). Many of these symptoms have coalesced into syndromes, often of unclear etiology, that

frequently gain legitimization through the lay media. Barsky and Borus (1995) provided examples of culturally created somatic illnesses including "sick building syndrome," "food hypersensitivity," and "chronic fatigue." Similar to ADHD, the etiology of these illnesses may be unclear and symptoms overlap considerably with nonclinical distress. Medicalization takes a slightly different form in the case of nonillnesses such as baldness, cosmetically imperfect noses, and self-limiting conditions such as indigestion. These unpleasant aspects of daily life have increasingly been reclassified as diseases worthy of a physician's attention (Barsky & Borus, 1995). In recent history, there has been a decline in public tolerance for self-limiting distress and conditions associated with less than optimal performance in social, work, and school settings (Barsky, 1988).

Barsky and Borus (1995) described a growing medical-industrial complex that is actively promoting a "medical ideology" to address minor physiological deviance and distress. As with many somatic symptoms, the lexicon of ADHD behaviors is nearly always present to some degree. The reported prevalence of the disorder itself, as well as the high frequency of hyperactive and inattentive behavior in classroom settings, will lead to no shortage of symptoms to focus upon and amplify. The increased availability of ADHD information for lay audiences is likely to increase parents' and teachers' sensitivity to "symptoms" which, in turn, prompt a physician visit.

In the past decade, there has been a major emphasis on marketing medical technology to the public. From the early 1900s until recently, drug manufacturers, medical laboratories, and physician specialists directed their information only to physicians (Starr, 1982). While there were isolated incidents of direct medical marketing to the public, these were traditionally met with strong negative sanctions by the professional health care community (Starr, 1982). Recent years have witnessed direct advertising to consumers of prescription medications, including antidepressants, antihypertensives, and smoking cessation agents. These trends extend beyond public education about available pharmacotherapy to using mass media to help patients self-diagnose physical and social misfortune as a disease to be treated. One example of this latter trend is advertisements for baldness treatments.

These newly arising syndromes often have unclear etiologies and parameters. However, these conditions often "assume prominence in the media and public consciousness" (Barsky & Borus, 1995, p. 1932) before a well-developed fund of knowledge is established. ADHD does not entirely fit this criterion. There are currently investigations attempting to isolate neurophysiological correlates of the disorder and factor analytical studies have been helpful in defining the disorders' parameters. However, there

continues to be debate about ADHD's defining feature(s). The central deficit in ADHD has been described as disinhibition (Barkley, 1997), inattention (Douglas, 1983), or hyperactive motor behavior (Porrina, Rapoport, Behar, Csceby, & Bunney, 1983). The disorder has certainly become popular through a groundswell of public support and the development of advocacy groups. The United Nations International Narcotics Board estimated that 10–12% of all U.S. boys between 6 and 14 are taking methylphenidate (Roberts, 1996). The largest advocacy organization for ADHD—Children and Adults with Attention Deficit Disorder—CHADD has 28,000 members in the U.S. (U.S. Drug Enforcement Agency, 1995). These organizations are extremely helpful for education and for reducing the sense of alienation and stigma experienced by parents and those with ADHD. At the same time, self-help groups may become a lobbying forum for greater medicalization.

Recently, there have been international and federal concerns about the widespread use of methylphenidate in the United States. The U.S. consumes 80% of the methylphenidate available worldwide. This figure is five times that of the rest of the world (U.S. Drug Enforcement Administration, 1995). The United Nations International Narcotics Control Board has raised concern about the rapid increase in methylphenidate prescriptions in the United States. Of Schedule II drugs monitored under international treaty, methylphenidate is the only one that has exhibited increased use (U.S. Drug Enforcement Administration, 1995). This pattern is almost entirely attributable to increased consumption in the U.S.

## IMPLICATIONS FOR HEALTH CARE PROVIDERS

### Clinical Practice and the Social Context

Psychologists have been in the forefront of conceptualization and clinical assessment of ADHD. Behavioral assessment tools, multmodal interventions, and data supportive of medication's clinical efficacy have emerged from psychological research. Presently, basic parameters such as the disorder's prevalence, defining features, etiology, and differential diagnosis remain ambiguous. While ADHD has been established as a valid diagnosis (Goldman *et al.*, 1998), there is concern that the label and accompanying pharmacotherapy are being applied too broadly.

The process by which ADHD has been incorporated into a medical paradigm is a concern. The rapid rise in ADHD diagnoses and stimulant treatment in the United States may be fueled by factors other than improved lay and professional knowledge or more accurate clinical evaluation.

The expansion of health care technology and information has the potential for making nonpathological deviance and socially created inequity into medical diagnoses. Neglecting these broader systemic forces prevents all health care providers from making truly informed judgments about patients encountered in everyday practice.

Sontag (1978) noted that diseases capturing popular attention reflect current cultural anxieties. Illnesses become societal metaphors emerging from projected collective fears. These attributions often include social-environmental causes unrelated to scientifically known etiologies. Cancer has been viewed as the outcome of environmental pollution while AIDS reflects the culmination of sexually permissive social norms (Sontag, 1989). ADHD's metaphoric meaning is not entirely clear. ADHD's capture of the public imagination may reflect anxieties about the impact of rapid social and technological change on children. Concerns about the erosion of "family values," the impact of computers and television, as well as a perceived decline in the quality of public education may be embodied in the ADHD metaphor. Inattention, problems with concentration, and distractibility, while linked to a diagnosable syndrome in many cases, may be perceived and treated in children, adolescents, and adults who are simply unable to keep up with increased performance demands in the face of decreased social resources. Although there is no evidence that social factors cause ADHD, medicalization reduces parental anxiety by replacing families, teachers, and other environmental influences on children with a neurochemical deficit treated with pharmacotherapy.

While thorough psychological evaluations are recommended by most clinicians as part of an ADHD evaluation, these actually occur in a small minority of cases (Wolraich *et al.*, 1990). Additionally, most providers agree that behavioral management is an important adjunct to stimulant treatment. However, the majority of diagnosed ADHD children are treated with medication alone (U.S. Drug Enforcement Administration, 1995; Wolraich *et al.*, 1990). Given the imprecise diagnostic criteria, problems of comorbidity and symptom overlap, and the high prevalence of ADHD behaviors among nonclinical samples, the exclusive reliance upon the physician's office visit for evaluation is particularly disturbing. Physicians are likely to be susceptible to influences from schools, managed health care companies, as well as parents educated by the lay media, and may diagnose and treat ADHD presumptively. These forces may contribute to misdiagnosis and inappropriate treatment of many children, adolescents, and adults. It is hoped that a recognition of the social and economic climate within which clinical practice takes place will become part of the reflective process of differential diagnosis (Schon, 1983).

### Towards Collaborative Care

The majority of persons with mental disorders are evaluated and treated in the primary care medical sector. In the United States, 60% of all mental health related visits are to primary care physicians; 25% of all health care visits are for mental health problems (Miranda, Hohmann, & Atkinson, 1994; Regier *et al.*, 1993). Surveys of pediatricians indicate that up to 40% of office time is devoted to behavioral, emotional, and developmental difficulties (Bailey, Graham, & Boniface, 1978; Garralda & Bailey, 1986). The majority of these children and youth are treated solely by primary care physicians.

With the rise in managed care plans featuring primary care physicians as gatekeepers for specialty services, it is likely that the mental health role of family physicians and pediatricians will only continue to expand (Pace, Chaney, Mullins, & Olson, 1995). Even before the advent of financial disincentives for mental health referrals from capitated health plans, primary care physicians typically managed psychological disorders without consultation (Kelleher, Hohmann, & Larson, 1989; Wolraich *et al.*, 1990).

The rapid rise in managed health care has challenged psychologists to develop new professional roles and service delivery models. A promising and meaningful role for psychologists would feature collaborative relationships with primary care physicians. In managing ADHD, psychological assessment, school consultation, family therapy, and the development of behavioral management plans will complement the physician's diagnostic evaluation and pharmacotherapy. Pediatricians and family physicians typically have little formal child psychiatry training. Psychologists' background in psychodiagnosis, including testing and behavioral assessment, could be extremely helpful in differential diagnosis of ADHD and related conditions. Similarly, the psychologist could alert the physician to the presence of a comorbid CD or ODD which is unlikely to be responsive to medication. Further collaboration could include monitoring the child's behavior and cognitive responses to medication, as well as family intervention and behaviorally focused treatment plans. While some primary care physicians are knowledgeable about psychological intervention, they rarely have the time to conduct thorough evaluations and engage in longer term treatments; the average pediatrician visit is 11.5 minutes (Goldberg, Roghmann, McInerny, & Burke, 1983).

Collaborative consultative practice between primary care physicians has been described in pediatric and family practice settings (Drotar, 1995; Seaburn, Lorenz, Gunn, Gawinski, & Mauksch, 1996). While it is evident that psychologists have a great deal to contribute to the assessment and

management of ADHD and other childhood mental health problems, it is necessary for them to develop practice patterns to fit the primary care context. Brief, focused assessment with a clear diagnostic formulation as well as realistic and efficient treatment recommendations will be necessary in order for primary care physicians to utilize psychological services (Drotar, 1995; Seaburn *et al.*, 1996).

Mental health consultation in adult primary medical care has been associated with reduction in health care utilization for 1–2 years following the psychosocial intervention (Mumford, Schlesinger, Glass, Patrick, & Cuerdon, 1984; Pallak, Cummings, Dorken, & Henke, 1994). This cost offset has been most pronounced for high utilizers of medical care with the greatest cost reductions associated with patients receiving brief to moderate mental health treatment (Seaburn *et al.*, 1996).

There have been very few studies of health care cost offset and utilization patterns in pediatric settings. A behaviorally specific intervention protocol was employed by pediatric psychologists in a health maintenance organization (Finney, Riley & Cataldo, 1991). Children and parents had between one and six mental health visits with an average of 2.4 contacts. The presenting problem was rated as resolved or improved by 76% of parents. When compared with a matched HMO patient group that did not receive the psychological intervention, the treatment group had fewer medical office visits in the following year. This benefit was particularly pronounced for the subgroup with externalizing behavior problems who reduced their medical utilization by one third (Finney *et al.*, 1991). A smaller study of British pediatric general practice patients involved a single session mental health intervention (Coverly, Garralda, & Bowman, 1995). About 40% of the treated children exhibited externalizing behavior problems including CD and ADHD. In the intervention group, the number of medical office visits declined over 50% during the following year. Although direct cost data are not available for these programs, psychological consultation for ADHD in the primary care sector appears to be more efficient, improves diagnostic accuracy, and fosters true multimodal treatment.

Collaborative arrangements between primary care physicians and psychologists may have other direct benefits to third-party payers. Primary care providers are usually comfortable managing psychotropic medication in the majority of cases. However, pediatricians and family physicians are less comfortable with their skills in evaluating ADHD children and adults. By including a psychologist in the care of ADHD patients, a psychiatric referral is often unnecessary. This strategy is likely to directly reduce mental health costs per patient.

## CONCLUSION

Attention-Deficit Hyperactivity Disorder has become a common, yet ambiguous, mental disorder treated primarily from a medical paradigm. Because ADHD is responsive to stimulant medication, there is understandable pressure to detect the disorder when it is present. The increased diagnosis and treatment of this noncommunicable illness raises questions about the role of broader social factors in the detection of ADHD. Psychologists who are able to collaborate with primary care physicians and combine their skills in differential diagnosis with an appreciation of the social-historical context of ADHD will bring a valuable perspective to patient care.

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