Inattention and Hyperactivity and the Achievement Gap Among Urban Minority Youth

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ABSTRACT

OBJECTIVES: To outline the prevalence and disparities of inattention and hyperactivity among school-aged urban minority youth, causal pathways through which inattention and hyperactivity adversely affects academic achievement, and proven or promising approaches for schools to address these problems.

METHODS: Literature review.

RESULTS: Approximately 4.6 million (8.4%) of American youth aged 6-17 have received a diagnosis of attention deficit/hyperactivity disorder (ADHD), and almost two thirds of these youth are reportedly under treatment with prescription medications. Urban minority youth are not only more likely to be affected but also less likely to receive accurate diagnosis and treatment. Causal pathways through which ADHD may affect academic achievement include sensory perceptions, cognition, school connectedness, absenteeism, and dropping out. In one study, youth with diagnosed ADHD were 2.7 times as likely to drop out (10.0% vs. 22.9%). A similar odds ratio for not graduating from high school was found in another prospective study, with an 8-year follow-up period (odds ratio = 2.4). There are many children who are below the clinical diagnostic threshold for ADHD but who exhibit signs and symptoms that interfere with learning. Evidence-based programs emphasizing functional academic and social outcomes are available.

CONCLUSIONS: Inattention and hyperactivity are highly and disproportionately prevalent among school-aged urban minority youth, have a negative impact on academic achievement through their effects on sensory perceptions, cognition, school connectedness, absenteeism, and dropping out, and effective practices are available for schools to address these problems. This prevalent and complex syndrome has very powerful effects on academic achievement and educational attainment, and should be a high priority in efforts to help close the achievement gap.

Keywords: attention deficit/hyperactivity disorder (ADHD); inattention; hyperactivity; cognition; school connectedness; school absenteeism; school dropout; child and adolescent health; coordinated school health programs; academic achievement; achievement gap; socioeconomic factors.

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variables that may be associated with ADHD and be the principal causes of the educational problems (eg, home environment). This limitation was addressed, at least in part, by Currie and Stabile in their analysis of parent and/or teacher reports on the behaviors of nationally representative samples of children in the United States and Canada. They analyzed the relationship between a hyperactivity score and a variety of educational outcomes. Even after controlling for extraneous variables such as learning disabilities and using sibling fixed effects statistical models, they found that children with the highest levels of hyperactivity were at greater risk for lower reading and mathematics test scores, grade repetition, and placement in special education. Perhaps most importantly, they found that even children with lower levels of hyperactivity who are unlikely to be diagnosed nonetheless experience harmful educational consequences. This suggests that educational innovations for children with the highest levels of hyperactivity may also confer benefits to the much larger number of children with lower levels of hyperactivity.

Although genes appear to play a role in the development of ADHD, the causes of ADHD are unknown and there is no known way to prevent this common mental disorder. Sometimes, the symptoms attenuate in adolescence, but often the consequences are persistent. Secondary prevention—early detection and treatment—is, therefore, the best strategy for minimizing the devastating life consequences to youth affected. Other mental health problems are associated with ADHD. For example, depression and learning disabilities. This not only complicates understanding the effects of this disorder on different outcomes, but also on understanding the etiology of different manifestations and possible additive and synergistic effects on cognitive and social functioning.

Progress has been made in identifying promising intervention approaches, including both pharmacological treatment and behavioral and environmental interventions, but the diagnosis and treatment of ADHD is complex and is influenced by limitations in current knowledge and by different values held by parents, teachers, pediatricians, and mental health professionals. There is no single diagnostic test for ADHD. Typically, a licensed health professional such as a psychologist or psychiatrist will collect information about a child’s behavior and environment. Detailed information about the frequency, duration, persistence, excessiveness, and consequences of the child’s behavior may be collected from parents, caregivers, teachers, and others who know the child well in different social contexts such as in school or at home. Consultation with a physician can help to assess other causes that may produce similar symptoms (eg, vision or hearing problems, learning disabilities). Once data are collected, the health professional will make a judgment about whether the child meets criteria for a diagnosis of ADHD. Currently, 5 criteria are used for a diagnosis of ADHD.

“A. Either (1) or (2):

(1) Six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

**Inattention**

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
(b) often has difficulty sustaining attention in tasks or play activities
(c) often does not seem to listen when spoken to directly
(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
(e) often has difficulty organizing tasks and activities
(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
(g) often loses things necessary for tasks and activities (eg, toys, school assignments, pencils, books, or tools)
(h) is often easily distracted by extraneous stimuli
(i) is often forgetful in daily activities

(2) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

**Hyperactivity**

(a) often fidgets with hands or feet or squirms in seat
(b) often leaves seat in classroom or in other situations in which remaining seated is expected
(c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
(d) often has difficulty playing or engaging in leisure activities quietly
(e) is often ‘on the go’ or often acts as if ‘driven by a motor’
(f) often talks excessively

Impulsivity

(g) often blurts out answers before questions have been completed

(h) often has difficulty awaiting turn

(i) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in 2 or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia or other Psychotic disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder’).

Given the heterogeneity of symptoms, reliance on reports of children’s behavior from parents (caretakers) and teachers, and differences in interpretation of symptoms, it is not surprising that prevalence estimates vary substantially worldwide. ADHD is one of the most common mental disorders affecting youth. One source of nationwide prevalence of ADHD is the Summary Health Statistics for US Children: National Health Interview Survey, 2008, which estimated that 8% of children aged 3-17 had ADHD. According to this recent national survey, prevalence was greater for boys (11%) than girls (5%), White (10%) and Black (9%) children than Hispanic children (4%), children in single-mother families (10%) than in 2-parent families (7%), in families with income less than $35,000 (12%) than over $100,000 (6%) (Figure 1), and in children aged 5-11 (7.3%) and aged 12-17 (11.1%) than in children aged 3-4 (1.9%).

A second source of prevalence estimates is the 2001 National Health Interview Survey Sample Child Component for 2001 (n = 10,367 children aged 4-17). These data indicated that ADHD was more prevalent for males (4.2%) than females (1.8%), and for children living in families with income less than $20,000.

Another large cross-sectional survey of a representative sample of the US population (n = 3082) found that 8.7% of youth aged 8-15 meet Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) ADHD criteria. In this study, youth from the poorest families (in the lowest quintile of poverty to income ratio) were more than twice as likely as the wealthiest youth (in the highest quintile of poverty to income ratio) to meet DSM-IV criteria for ADHD. Not only were children from the poorest families more likely to meet ADHD diagnostic thresholds, compared with all of the other children in the sample, they were less likely to receive consistent pharmacological therapy.

These data unequivocally show that inattention and hyperactivity problems are widespread among American youth and disproportionately affect urban minority youth from poor families, who may not only be more likely to be affected but also less likely to receive accurate diagnosis and treatment. An important element of mental and social-emotional health related to youth is its developmental nature. By definition, youth is a period of change. All youth exhibit some signs or symptoms comprising the spectrum of behaviors characterizing ADHD. The frequency, duration, and persistence of these behavioral patterns and their functional consequences in school and at home define ADHD as a mental disorder. Over time, some problems may resolve on their own while others may present later in youth and cause serious lifelong problems. For some youth ADHD symptoms continue into adolescence and adulthood. Periods of transition, for example, from childhood to adolescence and elementary to middle school, and middle school to high school, may be particularly stressful. Efforts to address mental health must be tailored appropriately to the
developmental levels of youth, which themselves vary substantially within the population.

Mental health problems such as ADHD and associated comorbidities may be conceptualized, in part, as a lack of proficiency in noncognitive skills.5 Skills such as tenacity and perseverance have been identified as determinants of academic and lifelong success.20-22 The extent to which these kinds of skills are formed early in life influences the extent to which children can benefit from educational opportunity (capabilities beget capabilities).20-22

A growing body of research demonstrates that both pharmacological treatment and behavioral intervention can be effective, particularly in controlling symptoms. Pharmacological treatments have been shown to reduce symptoms and to confer some educational benefits. Behavioral and environmental approaches are focused on influencing a child’s performance in various contexts, including in school. Some areas of performance are organizing tasks or completing schoolwork, self-monitoring, self-regulation, learning to wait for their turn and share with others, recognizing when to ask for help and doing so, increasing ability to interpret others’ nonverbal communication (eg, facial expression) and vocal intonation correctly.11 Teachers (and parents) give ongoing feedback to students (including low expectations) that can reinforce both the acquisition and maintenance of the heterogeneous syndrome of behaviors characterizing ADHD as well as the lack of self-regulation associated with this centrally important educationally relevant health problem.

CAUSAL PATHWAYS AFFECTING EDUCATIONAL OUTCOMES

Children with ADHD experience many problems in school. They have difficulty with sustained attention and are easily distracted, and they are often disruptive. Being easily distracted, having difficulty focusing sustained attention, becoming bored quickly, having difficulty completing homework and assignments, not listening to or following instruction well, and having difficulty processing information—all symptoms of inattention—have obvious implications for learning academic skills, for example, related to reading and mathematics. Inability to sit still and having difficulty doing quiet activities, not waiting for their turn, acting impulsively, being impatient, making inappropriate comments, interrupting others’ activities or conversations—all symptoms of hyperactivity or impulsivity—will cause further problems regarding getting along well with peers, teachers, and other adults. Given the prevalence, severity, and educational consequences of this mental disorder, it is one of the most (if not the most) important health problems affecting learning, social functioning, and educational outcomes.5 There is evidence that ADHD affects all 5 of the specified causal pathways.

Sensory Perceptions

Some data suggest that children with ADHD have a high frequency of ophthalmological problems, including disturbed development of the optic nerve and retinal vasculature.23 Treatment with stimulant medication has been associated with improved visual acuity and visual field results.24 Given the importance of visual information processing and integration of visual and motor coordination (eg, taking notes from a board), such deficits may contribute to learning problems. Children with ADHD have also been shown to have more problems with balance, which tends to be more associated with the visual system than the somatosensory or vestibular systems.25

Several studies have also investigated perception of time, which suggest that youth with ADHD have impairments in basic timing mechanisms.26-28 Time perception is a complex cognitive process involving different components of brain activity and facilitates one’s ability to anticipate, predict, and respond to different situations, including organizing and planning sequenced actions.28 Time perception deficits have been observed in youth with ADHD concerning discriminating and estimating time duration, which are associated with different aspects of memory.27,28 The implications of these observations for teaching and learning suggest one of many possible routes through which children with ADHD may be impeded in various learning tasks.

Cognition

There is an extensive literature on the symptoms and educational consequences of ADHD. But there is a paucity of prospective research on cognitive processing skills essential for higher order learning for boys and girls with different ADHD subtypes and comorbidities, and at different developmental levels. Improved understanding about the cognitive processes that are impeded among children with ADHD is not only important for characterizing the disorder and its consequences, but also for conceptualizing interventions to improve educational outcomes.

Studies have reported an association between ADHD and executive functioning, but note that associations vary within the heterogeneous population with ADHD.29-31 Other studies have demonstrated an interaction effect between ADHD, memory, and context (ie, level of distraction). These latter studies suggest that children with ADHD are capable of recalling important information, at least in certain learning contexts, but once distractions are introduced the ability to maintain engagement declines, which in turn is likely to affect
adversely the child’s comprehension as measured by questions testing causal relations.32-35

A recent study investigated visual attention, recall of factual information, and story comprehension over 21 months among children aged 7-9 who had a diagnosis of ADHD and an age-matched comparison group.32 Children watched a televised story under 2 conditions, with and without toys present. Children in the comparison group showed improvement in both recall of factual information and recall of causal relations whether or not toys were present. In contrast, children with ADHD showed no improvement in recall of factual information when toys were present and no improvement in recall of causal relations even when toys were not present.

Another recent study that provides developmental insight into the association between ADHD and cognitive functioning prospectively followed boys with persistent ADHD, remittent ADHD, and without ADHD over 10 years, and collected data at 3 points in time about IQ, achievement scores in reading and mathematics, and measures of executive function.36 No group by time interaction effects was observed. Compared with the boys who did not have ADHD, the boys with both persistent and remittent ADHD had consistently worse scores on all of the measures, leading the authors to conclude that the measured cognitive deficits were stable into young adulthood and were independent of the persistence of symptoms.

Disconnected sleep may be another cause of impaired cognitive function. Children with ADHD commonly experience sleep problems.37-42 The effect of sleep on cognitive function was discussed previously in the section on asthma (pp. 606-613) and is not reiterated here. The association between ADHD and sleep problems is complex and not fully understood.39,41 Sleep problems may be one of the side effects of stimulant medication11 and the majority of youth with ADHD are taking stimulant medication.1 Nonstimulant drugs are now available and have not been associated with sleep disturbances,43,44 but it is not clear how widely these are used.

Connectedness

One important consequence of ADHD is its effects on social relationships, such as lack of friendships and rejection by peers.45,46 The range of socially problematic behaviors associated with ADHD includes excessive talking, not listening, not getting along well with others, interrupting others’ activities and conversations, making inappropriate comments, not taking turns during games, and acting without regard for consequences.11 Problematic relationships with peers and adults may be compounded in children with ADHD because of common comorbidities that further impair social functioning, such as conduct disorder and oppositional defiant disorder.47

The majority of youth with ADHD experience rejection by peers.48 McQuade and Hoza49 reviewed current literature on social behaviors of children and proposed that one of the reasons that children with ADHD have social impairment may be due to their inability to accurately observe and interpret social behavior such as cues from others. They point out that current treatment approaches have focused on increasing social skills and reducing symptomatic behavior (eg, inappropriate social behavior), but have not been highly effective in normalizing the social status of affected youth.

The educational significance of peer rejection is illustrated even among youth who do not have ADHD. In a prospective study of 398 children followed between ages 5 and 12, peer rejection constrained classroom participation while cessation of rejection facilitated more cooperative and active classroom participation.30 These data indicate both the educational significance of chronic peer rejection, which youth with ADHD are likely to experience, and how reducing such rejection can increase classroom participation and thereby increase school connectedness.

There is an association between children’s exhibition of “problem” behaviors and quality of the teacher-child relationship.51 It is easy to understand why relations between a child exhibiting ADHD symptoms would be very challenging for a teacher, particularly if they have not had sufficient training. Relationships with teachers are a key factor contributing to school connectedness. The importance of these relationships for educational outcomes is illustrated by an 8-year prospective study, which found that teacher-child relationships during first grade were associated with academic outcomes when the children were in eighth grade.52

Absenteeism

ADHD has been associated with school absenteeism but the size of the effect is not clear. In 1 study, the absolute differences in number of days absent between children with ADHD and comparison children was estimated to be only approximately 1 day in grade 6 and approximately 2.5 days in grades 9 and 12.4 Within a sample of Australian children with ADHD, those with reported sleep problems were more likely to exhibit lateness and absenteeism.42

Dropping Out

Youth with ADHD have lower levels of educational attainment,9 and they are more likely to drop out of school. In 1 retrospective analysis over a follow-up period of more than 18 years, compared with youth who did not have ADHD, youth with diagnosed ADHD were 2.7 times as likely to drop out (10.0% vs 22.9%).4 A similar odds ratio for not graduating from high school
was found in another prospective study, with an 8-year follow-up period (odds ratio = 2.4). Causal inferences are difficult to make because of the many factors that contribute to drop out that are associated with ADHD (eg, lower reading ability, lower socioeconomic status); however, as youth with ADHD are at greater risk for these other factors as well, the implications for educational attainment remain significant.

WHAT CAN SCHOOLS DO TO ADDRESS INATTENTION AND HYPERACTIVITY PROBLEMS?

School health programs and policies are directly relevant to a national strategy to assist youth with ADHD in ways that minimize harmful educational, social, and life consequences. The school context is pivotal in identifying children who warrant further assessment to determine if they meet criteria for a diagnosis of ADHD, determining which children actually receive a diagnosis, monitoring the ways that a child may be responding to stimulant medication or other interventions, and implementing behavioral and environmental interventions to assist youth with ADHD to learn and practice performance skills to minimize the educational and social consequences of this complex behavioral syndrome.

Teachers are in an optimal position to recognize children who warrant further assessment and evaluation to determine if they may meet criteria for an ADHD diagnosis. Teachers may be the first to suspect that a child is affected by ADHD. Teachers also play a role in forming a diagnosis as the observations and reports they provide are central to assessment and evaluation. Teachers are in perhaps the best position to judge if the behaviors exhibited are representative of patterns as well as if they exceed normative expectations. In addition to parents, they can provide assistance with answering key questions necessary for a specialist to make an accurate diagnosis. Are the behaviors excessive and long-term? Do they happen more often in this child compared with the child’s peers? Are the behaviors a continuous problem or a response to a temporary situation? Do the behaviors occur in several settings or only in 1 place, such as the playground or classroom?

The classroom environment can be organized in ways that are useful in minimizing distractions. For example, 1 strategy is moving children who are most easily distracted further away from the other children and close to the teacher’s desk. An observant teacher can recognize interpersonal problems among the children in the classroom, lunchroom, or play area, and be prepared to intervene early at the first sign of problems. The teacher can also work closely with a behavioral specialist to reinforce the learning and habituation of some behaviors while attempting to extinguish others. The teacher will also contribute to decisions regarding the kinds of other services that may be needed, including being educated in a different context.

The heterogeneous nature of ADHD complicates tailoring treatment effectively. Teachers can provide valuable insight about the extent to which pharmacological treatments are having their intended outcome(s) and whether the child is experiencing any side effects. The teacher can also observe the academic and social situations in which problems are most likely to occur, which may suggest the kinds of skills training or other behavioral and environmental interventions that may be useful. Indeed, the teacher may play a major role in interventions to assist the children with ADHD.

A wide range of school-based intervention strategies applicable to youth with ADHD have been outlined and categorized as addressing attention and behavior, academic competence, and social competence. Strategies for improving attention and behavior include improving the teacher-student relationship, presenting rules clearly, providing contingent reinforcement, strengthening the reinforcement system, using verbal correction strategically, improving the point system, engaging the school and family in a problem-solving partnership, and implementing daily report cards. Strategies for promoting social competence include planning for an instructional match, providing novel tasks, setting appropriate goals, using peer-mediated strategies, using parent-mediated strategies, and incorporating computer-assisted strategies. Strategies addressing social competence include providing social skills training, promoting sustained friendships, intervening in the lunchroom, and intervening on the playground.

Emphasis in treatment of ADHD has tended to focus on controlling symptoms associated with behavioral and social difficulties rather than focusing on remediation of academic problems. Promising school-based academic interventions exist. For example, with respect to enhancing reading ability, promotion of phonological awareness and alphabetic principle, and collaborative strategic reading warrant consideration. With respect to mathematics, the cover, copy, and compare approach teaches children to correct incorrect responses before proceeding, while scheme-based instruction helps youth learn visual representations that are known to be useful for mathematical problem solving. Peer tutoring, computer-assisted instruction, task/instructional modifications, self-monitoring, strategy modification, homework focused interventions, classroom-based functional assessment procedures, and combined approaches have all been shown to yield promising results. Helping youth learn organizational skills, social skills, and ways to focus attention are also promising approaches that may benefit some subgroups of children with ADHD.
Another school-based approach involves outreach and partnership with parents of children with ADHD. This may include evaluating each child to assess their need for special services that may be provided based on federal or state mandates. School personnel may also be helpful to parents in facilitating linkages with community resources and in providing feedback to parents about the extent to which treatment approaches being used at home may be working to benefit the child in school.

PROVEN OR PROMISING APPROACHES

ADHD is controversial concerning conceptualization and treatment. There are numerous symptoms that can be used to identify ADHD and different tools used for diagnosis, which results in a “zone of ambiguity” concerning what comprises accurate labeling of ADHD and corresponding controversy about who should be treated and what pharmacological and/or behavioral interventions should be recommended. Furthermore, there are a variety of other factors that may also influence the choice and effectiveness of different intervention strategies, including subtype of ADHD, separate versus co-occurrence of academic and behavior problems, nature and extent of comorbidity, gender, developmental level, and family characteristics.

What is increasingly clear is the extent to which various attention and hyperactivity problems severely impede learning for millions of American youth, and particularly for low-income urban minority youth. The majority of interventions for youth with ADHD have focused on controlling symptoms rather than emphasizing functional academic and social outcomes. Nevertheless, promising approaches are available and warrant consideration as a high priority within the nation’s urban public schools.

Intervention strategies ranging from modifications to eating and sleeping patterns, behavioral therapy, classroom and other environmental modifications, and medications may be used to assist youth with ADHD. There is evidence from a large randomized trial that carefully monitoring medication among children with ADHD can favorably influence symptoms, but the extent to which such treatments confer long-term benefits over usual care received in the community has not been demonstrated. For children in families receiving public assistance or with coexisting conditions, combining behavioral intervention with medication may yield statistically superior results than medication alone.

Data from a retrospective observational study showed that receiving treatment with stimulant medication (median duration = 30.4 months) was associated with decreased grade retention, decreased absenteeism, and increased reading achievement. In another population-based study of medication use by children with ADHD, medication was associated with higher mean scores on standardized measures of mathematics (2.9 points higher) and reading (5.4 points higher). The authors acknowledge that these effect sizes would not be sufficient to close the gaps in achievement between children with and without ADHD. Nonpharmacologic treatments are also important because some children may not tolerate medication or may not take medication as prescribed, some parents may not find medication acceptable, and medication alone may be insufficient to address academic impairments and performance for some children. Various individual approaches and multimodal approaches all have shown promising, albeit not long-term proven, results. Behavioral approaches are also a very important element within the repertoire of treatments for ADHD. Stimulant medications have been shown to have a variety of side effects such as decreased appetite and sleep problems, less commonly the development of tics, and rarely more severe reactions. Parens and Johnston point out that while stimulant medication may reduce symptoms of inattention and hyperactivity, they do not help the child to develop control over attention and activity patterns.

SUMMARY

The mental disorder ADHD is the most common mental health problem affecting American youth. Urban minority youth from low-income families may be both at greater risk for this problem and less likely to receive medication for its treatment. There are many gaps in current knowledge regarding the etiology and most effective treatments for different subgroups of children affected by ADHD. What is unequivocally clear is that this is a common problem that has serious adverse effects on millions of children, including reduced academic achievement and educational attainment. Despite incomplete understanding and controversies, which may be based on different values and interpretations of existing research, medication, behavioral, and environmental interventions have yielded promising results for reducing symptoms and some functional impairment caused by ADHD. The majority of intervention research has focused on reducing symptoms, and a greater investment in intervention research aimed at educational outcomes, social relations, and functional life consequences is needed.

Although many children exhibit a spectrum of behavioral disorders (signs and symptoms) that meet diagnostic criteria for a diagnosis of ADHD, there are many other children who are clearly below the clinical diagnostic threshold, but who nonetheless exhibit some signs and symptoms that interfere with...
learning. While not sufficient to meet DSM criteria for diagnosis, these behaviors appear to impede motivation and ability to learn. Attention problems have been shown to predict academic achievement. The association between attention and internalizing and externalizing problems collected from an ethnically diverse cohort of children at age 6 was examined in relation to standardized measures of mathematics and reading achievement collected from youth at age 17, controlling for indications of family socioeconomic status and child’s IQ. Analysis of the 3 types of problem behaviors simultaneously indicated that, unlike internalizing and externalizing behaviors, the association between attention problems and academic achievement was not attenuated. It is very important to note that in this study data were collected from a cohort of children at school entry and the measures were treated as continuous variables rather than using diagnostic thresholds to classify children into groups such as ADHD or no ADHD. The implications of this finding emphasize that interventions directed to children with attention problems versus only those with a diagnosis of ADHD may enhance academic achievement. This is consistent with findings and recommendations of Currie and Sable regarding hyperactivity as well.

REFERENCES


