Attention-Deficit/Hyperactivity Disorder and the Juvenile Justice System

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ABSTRACT. Two-thirds of all felons released from state prisons are rearrested within three years. This appalling recidivism rate explains the intense and growing interest on the topic of desistance from crime. Yet, inexplicably, one of the major factors affecting desistance from crime, especially in the juvenile justice system, has received scant attention. That factor is attention deficit/hyperactivity disorder (ADHD). This article establishes the widespread prevalence of ADHD in the juvenile justice system and examines the major mechanisms whereby ADHD increases the risk for recidivism. The aim of this article is to highlight the critical importance of identifying and treating ADHD as an essential component for any best practices model for reducing recidivism.

KEYWORDS. ADHD, juvenile justice system, recidivism
Two-thirds of all felons released from state prisons are rearrested within 3 years (Doyle, 2003). This appalling recidivism rate explains the intense and growing interest on the topic of desistance from crime (Kazemian & Farrington, 2007) as well as the focus of the 2006 and 2007 symposia of Mental Health in Corrections Consortium on best-practice models for reducing recidivism (MHCC, 2006, 2007). However, inexplicably, one of the major factors affecting desistance from crime, especially in the juvenile justice system, has received scant attention. That factor is attention deficit/hyperactivity disorder (ADHD). Surprisingly, there is no explicit reference to the relevance of ADHD for understanding and reducing recidivism in the best-practice models proposed at the MHCC conventions, or in the February 2007 issue of the Journal of Contemporary Criminal Justice, which was devoted entirely to the topic of desistance from crime, or in the best-practice model proposed for a national strategy for early prevention of delinquency (Welsh & Farrington, 2007). The purpose of this review is to establish the critical importance of identifying and treating ADHD as an essential component for any best-practices model for delinquency prevention and recidivism reduction in the juvenile justice system.

For the purposes of this review, ADHD refers to what the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text revision; [DSM-IV-TR]; American Psychiatric Association, 2000) designates as the combined type. The review assumes a basic understanding of ADHD and will begin by updating this understanding in terms of a recent critical development in conceptualizing the nature of ADHD. Second, it will establish the widespread prevalence of ADHD in the juvenile justice system and the critical importance of identifying and treating ADHD as an essential component for any best-practices model for reducing recidivism. Third, it will examine the major mechanisms whereby ADHD increases the risk for recidivism.

ATTENTION DEFICIT/HYPERACTIVITY DISORDER

There is a robust international consensus that ADHD is a significant developmental disorder characterized by symptoms of inattention, impulsivity and hyperactivity (Barkley, 2002, 2006a; Doyle, 2006; Nigg, 2006). It is the most commonly diagnosed behavioral condition, affecting approximately 7% of children in the United States (Nigg), with males outnumbering females by ratios of 6:1 in clinic referred samples and 3:1 in
non-clinic referred samples (Barkley, 2006a). Approximately 30% to
60% of youth diagnosed with ADHD will continue to have impairing
symptoms into adulthood resulting in a conservative estimate of adult
prevalence of approximately 4% (Kessler et al., 2006). The disorder is
cased by genetic and neurological factors which result in impairments in
frontal-striatal-cerebellar brain circuits and therefore deficits in the execu-
tive functions (EF) that these circuits subserve (Biederman, 2006a, 2006b;
Biederman & Farone, 2005; Krain & Castellanos, 2006; Halperin &
Schultz, 2006; Nigg, 2006; Seidman et al., 2006).

Explanations of ADHD have traditionally been based upon causal
models in which a single, common-core EF dysfunction is thought to
explain all the deficits and symptoms of ADHD (Doyle, 2006; Sonuga-
Barke, 2005). However, recent developments in the understanding of the
neuropsychological heterogeneity in ADHD have led to a paradigm shift
away from models that posit a single, common-core EF dysfunction to
models that conceptualize ADHD as an umbrella construct. This means
that ADHD is a disorder that is characterized by a number of different
neuropsychological deficits, mediated by different neurological brain cir-

cuits, resulting in different manifestations of the symptoms commonly
seen in ADHD and therefore necessitating different treatment approaches
(Biederman & Farone, 2005; Castellanos, Sonuga-Barke, Milham, &
Tannock, 2006; Doyle, 2006; Nigg, 2006).

**PREVALENCE OF ADHD IN THE CRIMINAL
JUSTICE SYSTEM**

The prevalence of ADHD in the juvenile justice system is at least three
to four times the 7% rate seen in the general population (Biederman,
2006a; Nigg, 2006; Tudisco, 2006). This estimate is based on a conver-
gence of three different methods of estimating the prevalence of ADHD
in the juvenile criminal justice system.

The first method for estimating the prevalence of ADHD in the juve-
nile criminal justice system has two aspects. First, it assumes that since
most youth are incarcerated because of serious antisocial behavior, most
would warrant a diagnosis of conduct disorder (CD). In the broad spec-
trum of conduct problems, CD captures the violent, overtly destructive
dimension (McMahon & Frick, 2005) that is codified in the DSM-IV-TR
(American Psychiatric Association, 2000). CD refers to the more severe
antisocial and aggressive behaviors that result in serious violations of
others’ rights (McMahon & Frick), and its very nature involves aggressive, violent, confrontational behavior (Hartung & Widiger, 1998), which is the best predictor of criminality (Huesmann, Eron, & Dubow, 2002).

Second, building on this assumption, numerous studies and literature reviews of such studies have yielded mountainous evidence that the combined type of ADHD is an exceedingly common comorbid condition of CD, with estimates typically ranging from 20% to 50% for youth of both sexes (Barkley, 2006b; Biederman, 2006a; Chronis et al., 2007; Lynam, 1996; Waschbusch, 2002) and even approaching an astounding 100% in some well-designed studies (e.g., Klein et al., 1997; Lahey, Loeber, Burke, & Applegate, 2005). It should be noted that the numerous studies that indicate that at least 20 to 50% of those who have CD also have ADHD appear to be the most valid for diagnosing ADHD, since they typically employ clinical diagnostic criteria (Barkley, 2006a) and gather information from multiple sources (e.g., patient, parent, teacher) using structured interviews and well-standardized rating scales (Barkley & Edwards, 2006; Pelham, Fabiano, & Massetti, 2005).

In summary, since studies employing this method are the most numerous and most valid, they yield the most accurate estimate of the prevalence of ADHD among juveniles in the criminal justice system. It should also be noted that those youth who are comorbid for CD and ADHD display a more pernicious form of antisocial behavior than those with a single disorder in terms of a greater range, severity, and persistence of antisocial activity and greater academic impairment (Barkley, 2006b; Hinshaw & Lee, 2003; Pliszka, 2006).

The second method for estimating prevalence involves accepting prior diagnoses of ADHD of incarcerated youth. Prior educational data based upon individual education programs (IEPs) indicate that 28% of those with IEPs have an ADHD diagnosis (Tudisco, 2006). Note that this is a minimal prevalence estimate of ADHD among incarcerated juveniles since it does not include those juveniles who either have a prior diagnosis of ADHD that is not included in the IEP or are undiagnosed (Barkley, 2006a; Tudisco).

The third method for estimating prevalence involves using a structured interview to assess a randomly selected sample of incarcerated youth. Since youth with ADHD tend to underreport behavior and symptoms indicative of ADHD (Barkley & Edwards, 2006), it is not surprising that this method yields the lowest prevalence estimate of ADHD among incarcerated youth, with 17% in males and 21% in females aged 10 to 18 (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002).
In summary, though prevalence estimates of ADHD among youth in the juvenile justice system can vary widely from 17% to almost 100%, the aggregate evidence unequivocally supports the conclusion that the prevalence of ADHD in the juvenile justice system is at least three to four times the 7% rate in the juvenile population (Biederman, 2006a; Nigg, 2006; Tudisco, 2006). Even a very conservative estimate of at least 25% (with the true prevalence likely ranging somewhere between 25 and 50%) is of sufficient magnitude to establish the critical importance of identifying and treating ADHD as an essential component for any best-practices model for the provision of psychological services in the juvenile justice system.

**HOW ADHD INCREASES THE RISK FOR CRIME AND RECIDIVISM**

This article proposes that ADHD increases the risk for criminal behavior and recidivism through three major mechanisms. First, it is proposed that deficits in EF markedly increase the risk for developing oppositional defiant disorder (ODD), which, in turn, in interplay with certain environments markedly increases the risk for developing CD. Second, it is proposed that comorbid ADHD and CD increase the risk for a substance use disorder (SUD) as well as academic and job failure. Third, it is proposed that this toxic brew of ADHD and CD with frequently occurring SUD increases the risk for criminal behavior and recidivism and thus explains the widespread prevalence of ADHD among juvenile offenders. Obviously, other variables and linkages are no doubt involved, but this model aims to articulate the most important components.

**ADHD Increases the Risk for ODD and CD**

ADHD is a potent risk factor for the development of ODD since the cardinal symptom of impulsivity, combined with frequently occurring features such as low frustration tolerance, anger outbursts, emotional liability, and academic failure increase the likelihood of the development of ODD and thus helps explain a comorbidity rate of at least 55% (Barkley, 2006b). In turn, this highly challenging comorbid behavior is theorized to elicit negative and maladaptive parenting that helps explain why CD develops about 25% of the time in youth who have
ADHD and ODD (Chronis et al., 2007; Whittinger, Langley, Fowler, Thomas, & Thapar, 2007; Nigg & Breslau, 2007; Rutter, 2006). The risk for developing CD is even further increased when youth comorbid for ADHD and ODD are raised in dysfunctional families and neighborhoods (Button, Scourfield, Martin, Purcell, & McGuffin, 2005; Chronis et al; Rutter).

In summary, there is a developmental pathway from ADHD to ODD and from ADHD/ODD to CD (Nigg & Breslau, 2007). However, it is important to note that the comorbidity of CD and ADHD has been posited to be a unique disorder, or a subtype of ADHD, and not simply an aggregate of two disorders (Barkley, 2006b, 2006c; Pliszka, 2006). Regardless of which theory is correct, it is beyond cavil that the striking comorbidity of ADHD with CD must be effectively addressed in any best-practices approach for the provision of psychological services in the juvenile justice system.

**ADHD and CD Increase the Risk for SUD**

SUD, with a lifetime prevalence of 15%, is one of the most common and serious mental health issues in the United States and is associated with significant morbidity in multiple realms of functioning for adolescents (Waxmonsky & Wilens, 2005). Furthermore, as with criminality, ADHD markedly increases the risk for using illicit substances, especially when it is comorbid with CD or ODD in childhood (August et. al, 2006; Barkley, 2006d; Brown, Anderton, & Roy, 2006; Wilens, 2004a; Wilson & Levin, 2005). Thus, approximately 25% of those with ADHD will develop an SUD in adolescence or early adulthood (Wilens, 2004a) with the lifetime risk for someone with ADHD developing SUD being 55% (Biederman, 2006b). This risk translates into approximately 40% of adolescents with SUD being comorbid for ADHD (Wilens, 2004b). There is evidence that those comorbid for SUD and ADHD become dependent more quickly, remain so for longer periods of time, are at greater risk for treatment failure (Brown, Anderton, & Roy, 2006; Levin et al., 2004; Wilens, 2004b), and are most at risk for criminal violence (Tudisco, 2006).

Two major theories have been proposed to explain why ADHD increases the risk for licit (e.g., nicotine) and illicit (e.g., cannabis) substance use and the development of SUD in adolescents (Barkley, 2006d; Marshall & Molina, 2006). First, as previously discussed, ADHD increases the likelihood of developing ODD and CD, which in
turn increases the risk for using illicit substances (Barkley, 2006d). This comorbidity in turn increases the risk for academic and social failure (Barkley, 2006d; Brown, Anderton, & Roy, 2006; Marshall & Molina), thereby increasing the risk for school non-attendance, dropping out, and associating with substance-using, deviant peers (Brown et al; Marshal & Molina). Second, despite a paucity of systemically derived data, it is highly probable that self-medication is one of factors that contributes to SUD for a subgroup of individuals with ADHD (Wilens, 2004b, 2006). Though the initial drug usage for individuals with ADHD is likely for the unusual reasons (e.g., experimentation, desire for peer acceptance, assuaging psychological distress, etc.), once usage has begun, the self-medication factor reinforces and adds to the reasons for initial use (Brown et al.). The evidence for this theory is based upon numerous accounts of individuals with SUD reporting increased relaxation and improved attention when using substances such as nicotine, cannabis, and alcohol (Brown et al; Hurley & Eme, 2004; Wilens, 2004b). Furthermore, there is sound scientific basis for the validity of these self-reports, since both addictive drugs and stimulant medication for treating ADHD (i.e., ritalin, adderall) stimulate the release of the same neurotransmitters (dopamine and norepinephrine; Biederman, 2006b; Carni & Farri, 2003; Connor, 2006; Iversen, 2006).

**ADHD, CD, and SUD Increase the Risk for Academic and Job Failure**

When the biologically based deficits in EF combine with the acquired psychosocial deficits of ODD, CD, SUD, or any combination thereof, they produce a toxic brew that markedly impairs academic and job functioning for all the obvious reasons.

**Academic Functioning**

Academic functioning is a domain of tremendous difficulty for youth with ADHD and various comorbid disorders (i.e., ODD, CD, SUD) such that almost all clinic-referred children perform poorly at school (Barkley, 2006d). For example, approximately 30% repeat a grade, 30% to 40% may be placed in special education, 45% may be suspended from school, and 10% to 35% may drop out (Barkley, 2006d). These difficulties can be expected to increase the likelihood that the student will reject the socializing
school experience for more risky antisocial street experiences and thus provide another mechanism for increasing the risk for criminal behavior and recidivism.

**Job Functioning**

When youth with ADHD become adults, they can expect to be more likely to be unemployed than those without ADHD (Kessler et al., 2006). Adults with ADHD are more likely to quit a job out of boredom and are more likely to be disciplined or fired because of a host of problems, such as difficulty getting along with others, working independently, being punctual, and managing time and daily responsibilities (Murphy and Barkley, 2007). For example, the highly successful CEO of Jet Blue Airways, David Neeleman, whose ADHD contributed to his dropping out of college and who was not diagnosed until adulthood, was once fired from a vice president’s job at Southwest Airlines because he lacked diplomacy (Hallowell & Ratey, 2005; Shellenbarger, 2006). Again, as with academic failure, job failure can be expected to increase the risk for criminal behavior and recidivism.

**CONCLUSION**

This review has established the critical importance of identifying and treating ADHD as an essential component for any best practices model for the provision of psychological services in a juvenile justice system that aims at preventing delinquency and reducing recidivism. Having done so, it logically follows that an adequate understanding of ADHD is an essential component for the satisfactory education of all those involved in this system. The information provided by this article is deemed to contribute to this education, which in turn should to be built upon in order to implement a best-practices model. Since 25% or more of juveniles in the criminal justice system have ADHD, an essential first step in any best practices model would be to require education on ADHD for all those involved in this system, including lawyers, judges, probation and parole officers, and all others with a stake in improving juvenile justice. Such education could take the form of lectures, a seminar, or a course that is conducted by experts. Having been so educated, the respective personnel would be better able to competently serve the 25% or more of youth with ADHD whom they deal with on a regular basis.


Practice Update


