

# Asperger's Disorder and Criminal Behavior: Forensic-Psychiatric Considerations

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Asperger's Disorder remains an under-diagnosed condition because of clinical unfamiliarity with its adult presentation. As forensic clinicians become familiar with the presentation of Asperger's disorder, it appears that affected individuals are over-represented in forensic criminal settings. Unique features of such persons may heighten their risks for engaging in criminal behavior. Both Theory of Mind deficits and a predilection for intense narrow interests, when coupled with deficient social awareness of salient interpersonal and social constraints on behavior, can result in criminal acts. We discuss comorbidities of forensic relevance. We present several cases that highlight these issues and review the relevant forensic literature. Furthermore, there may be valid questions as to degree of criminal responsibility in such persons. From a neuropsychiatric perspective, these disorders appear to have a biological underpinning for deficits in empathy, a finding that may have important repercussions when assessing remorse in criminal proceedings.

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Because the DSM did not include Asperger's Disorder (AD) until the publication of its fourth edition in 1994 (DSM-IV),<sup>1</sup> many forensic clinicians were not formally trained in diagnosing this condition in adults. As forensic mental health professionals become familiar with the features of AD and other high-functioning Autism Spectrum Disorders, they often realize that they have affected persons in their caseloads, but lack a diagnostic paradigm to subsume the clinical features with which they were presented. In this article, for diagnosis we relied on the most recent version of the Diagnostic and Statistical Manual, DSM-IV-TR (Table 1).<sup>2</sup> The DSM-IV-TR refers to Asperger's Disorder as a developmental disorder that encompasses significant impairment across several domains (Table 1). However, other well-accepted diagnostic alternatives to DSM-IV-TR exist (Table 2).<sup>3,4</sup> In this article, we will focus on Asperger's Disorder and the related higher functioning condition of Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) and will refer to

them as higher functioning Autism Spectrum Disorders (hfASDs).

A series of reports published during the past two decades suggests that these disorders are at times associated with criminal activities.<sup>5–13</sup> Therefore, recognizing hfASDs and expanding clinicians' appreciation of their psychiatric-legal ramifications may be of substantial value to forensic psychiatrists. Our main goal in this article is to aid forensic clinicians in identifying hfASD cases and in articulating relevant criminal-legal issues involving them. We will also provide an overview of the core features of hfASDs and the potential associations between hfASDs and criminal behavior, placing special emphasis on violent crimes. We will discuss the prevalence of hfASD in forensic settings and the psychiatric-legal issues frequently encountered in hfASD defendants. Three cases will be presented to highlight these problems. Finally, recommendations for further study in this area will be discussed briefly.

## Diagnostic Aspects of Asperger's Disorder and Related Autism Spectrum Disorders

Asperger's Disorder, the prototypic hfASD, is characterized by a triad of deficits.<sup>2–4,14–16</sup> A core feature of AD involves deficient reciprocal social be-

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**Table 1** DSM-IV-TR Criteria for Asperger's Disorder

- A. Qualitative impairment in social interaction, as manifested by at least two of the following:
  - Marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
  - Failure to develop peer relationships appropriate to developmental level
  - A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people)
  - Lack of social or emotional reciprocity
- B. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
  - Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
  - Apparently inflexible adherence to specific, nonfunctional routines or rituals
  - Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
  - Persistent preoccupation with parts of objects
- C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning
- D. There is no clinically significant general delay in language (e.g., single words used by age two years, communicative phrases used by age three years)
- E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than in social interaction), and curiosity about the environment in childhood
- F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia

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**Table 2** Asperger's Disorder Diagnostic Configuration as a Function of Three Diagnostic Systems

	Diagnostic System		
	a	b	c
Social impairment	+	+	+
Nonverbal communication deficits	+	+	+
Failure to develop peer relationships	+	+	+
Lack of social sharing	+	+	+
Lack of social/emotional reciprocity	+	+	+
Poor empathy	+	+	+
Restricted/repetitive patterns	+	+	+
Pervasive preoccupation with stereotyped and restricted patterns of interest of abnormal intensity and focus	+	+	+
Apparently inflexible adherence to specific, nonfunctional routines or rituals (all absorbing interest)	+	+	+
Stereotyped/repetitive motor mannerisms	+	+	+
Persistent preoccupation with parts/objects	-	-	+
Social/occupational/other dysfunctions	+	+	+
Language/communication criteria	+	+	+
Language communication deficits may be present	+	-	-
Language delays may be present	+	-	-
Poor prosody and pragmatics	+	-	-
Idiosyncratic language	+	-	-
Impoverished imaginative play	+	-	-
Motor clumsiness	+	-	-
No cognitive delays	-	+	+
Absence of other pervasive developmental disorders	-	+	+
Absence of schizophrenia	-	+	+

a, Gillberg and Gillberg<sup>3</sup>; b, ICD-10<sup>4</sup>; c, DSM-IV-TR<sup>2</sup>; +, diagnostic criterion is present in this diagnostic system; -, diagnostic criterion is not present in this diagnostic system.

havior. The second component of the triad involves communication deficits, both verbal and nonverbal. Affected persons demonstrate pragmatic communication deficits; that is, an inability to respond appropriately in social discourse. These may include use of gestures, personal space, timing, topic selection, and recognizing humor, irony, or sarcasm. Prosody may be abnormal and language pedantic. The deficits in language directly impair the capacity for social reciprocity. These language abnormalities are generally subtle enough not to require childhood special education services. The third component of this triad is characterized by abnormalities of flexible imaginative activities. AD individuals engage in stereotyped, excessively focused, and repetitive activities. Also, they may demonstrate a lack of coordination.<sup>2,17</sup> Recent evidence suggests that the triad of social deficits, communication deficits, and restricted/stereotyped interests may be represented as a single continuously distributed genetic variable.<sup>18</sup> Persons with hfASD present with cognitive intelligence at least in the normal range.<sup>2</sup>

A carefully conducted clinical interview informed by DSM-IV-TR is a minimal requirement in assessing adults for hfASD. Also, a reliable developmental history with collateral informants is crucial in establishing the diagnosis. As discussed herein, affected probands often lack the ability to assess their functional capacities and deficits accurately. Therefore, without objective information regarding psychosocial functioning and behavior, this diagnosis can eas-

ily be missed. Information from family, co-workers, peers, and victims will help determine the degree of social impairment. Childhood history is essential. Typically one finds a history of few or no friends, with long hours spent on narrow pursuits; often the proband has been bullied.<sup>13</sup>

There are many psychometric instruments that may enhance clinicians' ability to identify persons with AD and other hfASDs.<sup>19,20</sup> Screening diagnostic tools, such as the Autism Quotient<sup>20</sup> and the Social Responsiveness Scale,<sup>18</sup> may be particularly useful during the initial assessment for hfASDs. Comprehensive diagnostic instruments such as the revised version of the Autism Diagnostic Interview<sup>19</sup> or the Autism Diagnostic Observation Schedule<sup>21</sup> should be used whenever possible to optimize the diagnostic evaluation of hfASDs. Psychological testing of AD subjects typically demonstrates a split on IQ testing, with Verbal IQ greater than Performance IQ.<sup>22</sup> Neuropsychological testing often shows impaired executive functioning, especially in abstract and social reasoning. Speech and language evaluation may reveal abnormalities in pragmatic speech.<sup>19</sup>

Given that affected individuals may present with deficits in social processing such as empathy, documentation of those deficits with instruments such as The Emotional Quotient Inventory<sup>23</sup> or the Empathy Quotient<sup>20</sup> may be very helpful in the assessment of hfASDs. Recent research suggests a bias for systematizing cognition in AD. Therefore, an instrument designed to assess for this ability, such as the Systemizing Quotient,<sup>20</sup> may be of benefit in evaluating persons with hfASDs.

### Differential Diagnosis

Persons affected by hfASDs may partially compensate for some of their deficits as they grow into adulthood.<sup>24</sup> Not infrequently, adults with hfASDs are misdiagnosed with cluster A Personality Disorders, in part because clinicians are more familiar with these constructs. Lack of adequate developmental history, especially with regard to narrow interests and poor peer relationships, may preclude consideration of hfASD. Therefore, an important consideration for the differential diagnosis of hfASD involves Schizoid and Schizotypal Disorders. Moreover, for both Schizoid and Schizotypal Personality Disorder, DSM-IV-TR advises that these diagnoses should not be made if the criteria for an hfASD are met.<sup>2</sup> The available literature strongly suggests that many cases

of Schizoid Personality Disorder meet criteria for Asperger's Disorder. Wolff goes so far as to propose that the term "Schizoid/Asperger Disorder" emphasizes the close relatedness of Schizoid Personality Disorder to AD.<sup>25</sup> A recent study indicates that Schizoid and Schizotypal Personality Disorders are essentially indistinguishable from each other.<sup>26</sup> By extension, this study in combination with earlier literature documenting the close relation between Schizoid Personality Disorder and AD,<sup>25</sup> suggests that Schizotypal Personality psychopathology is also likely to correlate highly with AD psychopathology. This view is partially supported by DSM-IV-TR in that the latter recognizes that the presence of hfASD precludes a diagnosis not only of Schizoid Personality Disorder, but also of Schizotypal Personality Disorder.<sup>2</sup>

The diagnosis of hfASD can be substantially complicated by heterogeneity in presentation. For example, with respect to reciprocal social interaction, one may see aloof indifference to others, passive acceptance of social approaches, or intrusive, odd, one-sided approaches to social interaction.<sup>27</sup> Furthermore, this psychopathological heterogeneity appears partially related to developmental stage. That is, an adult offender with hfASD may present differently in adulthood than in childhood.<sup>13,28</sup> Likewise, hfASD individuals with PDD-NOS are more likely to be better socially adjusted than those with AD in both degree and breadth of psychopathology. However, the PDD-NOS group may be at higher risk to offend,<sup>24,29</sup> because they actively seek interactions with other persons more frequently than do individuals with AD, but lack the skills to consummate them in a normal fashion.

Many writers in the field of autism emphasize the high prevalence of comorbid psychiatric conditions. Depression is the most commonly reported comorbid disorder, but anxiety disorders including obsessive-compulsive disorder (OCD) are also reported.<sup>30</sup> Given their propensity for intense, narrow interests and rituals, hfASD subjects may appear to be suffering from obsessive-compulsive psychopathology. However, because their pursuits are not ego dystonic, they may fail to meet DSM-IV-TR diagnostic criteria for OCD, and may be diagnosed with Anxiety Disorder NOS.<sup>31</sup> Psychotic disorders may co-occur on occasion.<sup>32</sup>

### Epidemiology of hfASDs and Criminality

Early studies suggested a prevalence of ASDs of about 0.05 percent.<sup>33</sup> However, recent surveys sug-

gest a prevalence of all ASDs of 0.60 percent. The prevalence rate for PDD-NOS is .31 percent and for Asperger's Disorder it is 0.095 percent.<sup>34</sup> A large epidemiological study based on 788 twin pair data produced an estimated prevalence rate for all autism spectrum disorders of 1.4 percent in males and 0.3 percent in females.<sup>18</sup> The increased prevalence is due to better clinician training in ASD diagnosis, a change in diagnostic schemata, and enhanced familial and social acceptance of the diagnosis. Some contend there is also a true increase due to as yet unidentified environmental influences, although this has not been verified.<sup>34</sup> Increased estimates in the prevalence of ASDs also raise the possibility of correspondingly higher estimates of individuals with hfASDs who engage in criminal behavior. As with several other developmental disorders, the hfASDs are over-represented among males: approximately 85 percent of individuals with hfASD are male.<sup>14</sup> Given the strong association between male gender and violence, a male preponderance among individuals with hfASDs may also increase the risk for violent criminal behavior in hfASDs.

Recent studies suggest that the prevalence of hfASDs in forensic samples is substantially higher than in general community samples. Scragg and Shah<sup>35</sup> screened the entire male population of Broadmoor Hospital for cases of Asperger's Disorder. They found a prevalence of 1.5 percent and, when equivocal cases were added, the rate increased to 2.3 percent. Only one-third of the Asperger's patients had had a previous diagnosis of Asperger's Disorder. This number does not reflect PDD-NOS cases, as they were not included.<sup>36</sup> Hare and colleagues<sup>36</sup> screened 1305 subjects in all English special (forensic) hospitals. Of the 1305 subjects screened, after case review of those with a positive screen, a rate of 2.4 percent ASD was found, with an additional rate of 2.4 percent more cases of uncertain ASDs. Only 10 percent of the ASD group had a previous diagnosis. Of the 31 definite ASD cases, 21 had Asperger's Disorder. Hospital records indicated that the most common preexisting diagnosis for the researcher-identified ASD group was schizophrenia. Personality disorders were the second most common diagnoses. Eighty-four percent of the ASD group demonstrated circumscribed interests, a quarter of which related to violent themes. Homicide occurred at a rate consistent with the special hospitals' base prevalence, sexual offenses were underrepresented

(3% versus 9%), and arson was over-represented (16% versus 10%).

Siponmaa *et al.*<sup>29</sup> were able to obtain detailed developmental histories for all pre-sentencing evaluations in a cohort of young adult males. According to ICD-9 criteria, 53 percent of these cases were diagnosed as Personality Disorder NOS. However, when they analyzed the cases according to DSM-IV and Gillberg's diagnostic criteria for Asperger's Disorder, the authors found a prevalence rate for definite ASD of 15 percent, and 12 percent for probable ASD. PDD-NOS represented 17 percent of all cases (definite plus probable). Only 2 of 34 cases had been diagnosed as hfASD, although one-half had received prior mental health services. This report illustrates several points. Certain diagnostic approaches fail to recognize the construct of hfASDs. Thus, earlier studies in the literature have failed to detect developmental disorders, probably labeling their manifestations instead as character pathology.<sup>37</sup> hfASDs were highly prevalent in the Scandinavian study,<sup>29</sup> and the PDD-NOS category in particular was common. In our experience, this group is the easiest to fail to recognize. It is possible that their social oddness and poor social comprehension are not recognized as evidence of a psychiatric disorder.

Although the previously mentioned literature suggests an association between AD and criminality, some investigators have questioned it. Ghazziudin *et al.*,<sup>38</sup> for example, estimated a low prevalence of aggression in AD, possibly as low as 2.7 percent. Wolff's longitudinal studies of schizoid personality suggest that while affected females have an elevated rate of criminal activity versus normal control subjects, affected males do not.<sup>39</sup> Palermo<sup>40</sup> acknowledges that criminal behavior associated with aggression occurs in hfASDs, but believes that the associated aggression can be best accounted for by co-occurring psychiatric conditions such as attention deficit hyperactivity disorder (ADHD), bipolar disorder, and depression.

### Features of hfASDs Relevant to Criminal Actions

Our focus in this article is on describing the components of hfASD that might increase the vulnerability of an affected individual to break the law. This is not to say that having a developmental disorder enhances the likelihood of acting criminally *per se*. Rather, we shall describe the features of hfASD that

would most likely be involved when criminal actions occur.

Criminal activity associated with hfASD psychopathology can be divided into two broad domains: (1) deficits in Theory of Mind (ToM) abilities and/or (2) abnormal, repetitive narrow interests. Theory of Mind (or mentalization) refers to the ability to estimate the cognitive, perceptual, and affective life of others as well as of the self.<sup>36,42</sup> This relative inability to utilize ToM abilities has been termed "mindblindness."<sup>43</sup> hfASD individuals have substantial difficulties with reading social cues. HfASD perpetrators generally present with significant deficits in their abilities to know that another person has a different emotional cognitive experience of a shared event. They may suffer from an inability to read the necessary interpersonal cues telling the perpetrator to disengage from a social encounter.

Frith<sup>44</sup> introduced the concept of central coherence, a process that involves the natural tendency for human beings to construct their view of the world as a rich, but unified, tapestry of lived experience. However, many people with hfASDs live key aspects of their lives, including their social, moral and physical environments, outside of the unified whole more common to normal human experience. Therefore, individuals with deficits in central coherence may engage in criminal behavior because of their excessive preoccupation with highly focused internal interests, while ignoring social consequences, including legal sanctions. Another model for this is "top-down modulation," which posits that one makes behavioral choices based on long-term goals, which prevents their being distracted or overloaded by stimuli. Frith<sup>45</sup> and others have noted a failure of top-down modulation in hfASD.

Silva *et al.*<sup>46</sup> have recently proposed that deficits in internal coherence and associated compartmentalizing characteristics of individuals with hfASD may predispose them to develop a psychological niche for the growth of inner preoccupations. Such fixations, if left unchecked by normal awareness of social mores and constraints, may lead to maladaptive fantasies. These deficits appear to be dramatically highlighted by sexual serial killers with hfASD who live highly compartmentalized lives with a "prosocial component," in which they tend to function as law-abiding citizens, and an "antisocial" component, during which they live a sexually predatory lifestyle.<sup>47,48</sup>

We must also emphasize that although it may be convenient to discuss the crimes of hfASD persons as a function of ToM deficits or abnormal repetitive narrow interests, their crimes often involve deficits in both domains and variable degrees of causation with regard to criminal behavior. For example, persons with hfASD may perpetrate sexual crimes closely associated with their repetitive, stereotyped, and excessively focused interests. However, their relative inability to mentalize also places them at risk for engaging in sexual behavior that is unwelcome by others. The following cases, provided by the authors, demonstrate these features. They were reviewed by an Institutional Review Board for appropriateness of inclusion in this report.

## Case Histories

### Case I

Mr. A. was a young volunteer fireman charged with capital murder. He was accused of starting a fire in his apartment to obtain insurance money. The fire killed his young daughter and nearly killed his wife. The initial impression of his defense attorneys was that he was "narcissistic," because he appeared cold and unremorseful. His facial expression rarely displayed emotion. He had had problems relating to peers since grade school and had been bullied by other children. He was said to be "backwards" because he could not pick up on subtleties. His parents noted that he misinterpreted stimuli and could not understand why things happened.

Mr. A. displayed poor social skills. He had trouble keeping jobs and was working at a grocery store when he was arrested. He had no adult friends. In every town he had lived in, he had been a volunteer fireman. Although his peers at the local fire department did not socialize with him and found him odd, he told a relative that he thought he would be elected an officer in the next election at the fire department. He stole a relative's credit card and used it to charge fire-fighting supplies. Although these items were in his apartment, he blamed a friend for taking the credit card. His denial was met with universal incredulity.

After the fire that killed his daughter, Mr. A. informed people that he was thinking of buying a new jet ski with the insurance money from his daughter's death. In his confession, he indicated that he had set the fire to rescue his family and "make a fresh start."

He displayed little emotion, minimal body language, and few facial expressions, leading some to conclude that he was “cold and calculating” and that he felt no remorse. He gave investigators the names of many people he said were friends who could be character witnesses, but none of these individuals considered themselves friends of the defendant. He was diagnosed with PDD-NOS and Major Depression during his capital murder evaluation. Psychological testing noted Schizoid Personality traits. He received a 60-year sentence.

### Case 2

Mr. B. was a middle-aged substitute teacher who was accused of touching numerous adolescent female students. This resulted in his being charged with several counts of child annoyance. He was reported to have inappropriately touched the shoulder area of many of his adolescent female students. Most of the alleged contacts had occurred in full view of many other students over a period of about four months.

During his childhood and adolescence, Mr. B. had had no friends, but he was a good student. He obtained a degree in engineering, but failed a graduate examination five times because he took too long ruminating on his answers. He then completed a Master’s degree in chemistry, but alienated his professors and others in his department due to his rigid, pedantic approach and his inability to interact socially with people in general. He had no adult male friends. He then completed training in education, but was unable to find a job as a regular school teacher. He was able to find work as a substitute teacher, but was soon accused of the crimes that led to his current legal difficulties.

Mr. B. reported having had three girlfriends in his life, but upon questioning he described his most extensive romantic relationship as involving a woman from church to whom he had written letters, but who had declined his request to go on a date. He was diagnosed with DSM-IV-TR Pervasive Developmental Disorder-NOS and Sexual Abuse of Child, but did not meet DSM-IV-TR criteria for any Paraphilia. He was found guilty of two counts of child annoyance and given probation.

### Case 3

Mr. C. was a deaf man referred for outpatient psychotherapy. He had had great difficulty making friends throughout his life and complained of lone-

liness and wanting a friend. He was very dependent on his job coach for helping him through the demands of daily living. He also had some difficulty following directions on his job. The primary concern at the time of referral, however, was his inappropriate sexual behavior. He compulsively propositioned male strangers for sex, especially in public rest rooms, a behavior that resulted in his being physically assaulted and banned from some public spaces. All previous attempts to convince him to find other sexual outlets had been unsuccessful. His job coach was concerned that he might be more seriously injured or arrested if he did not alter his sexual behavior.

Mr. C., who was white, fixated on black males. The only white males he propositioned had an occupation in which he was interested. For example, he propositioned the white elevator repair man. Mr. C. was fascinated with elevators and enjoyed measuring them. He also enjoyed going to computer labs on university grounds. As he was not a student, university police had repeatedly warned him to stop trespassing. He received two trespassing charges, but he persisted in trespassing. He liked construction sites and recurrently trespassed to view them as well.

Mr. C.’s understanding of normal social interactions was extremely skewed. For example, he would often complain that “no one came to my house this weekend” when he had not invited anyone, and there was no one in his life who might be inclined to drop in unannounced. In role plays about how to meet new people and make friends, he often went from “Hello. How are you?” to “Will you move in with me?” in fewer than three exchanges.

Mr. C.’s communication skills were quite impaired. His conversation tended to be very loosely organized, and he made little attempt to give the listener enough background to make the topic clear. These pragmatic deficiencies made conversation with him painfully difficult to follow. Both deaf and hearing people had trouble understanding him. His nonverbal behavior was also notably odd. For example, during the initial interview, he maintained a smile on his face in a fixed fashion, regardless of the content of his communication. He also had an awkward gait.

Family history was not available. Cognitive ability appeared to be below average. Mr. C. was diagnosed with Dysthymia and with Major Depressive Disorder, in addition to Asperger’s Disorder.

## Discussion of Cases

With regard to impaired reciprocal social skills, Mr. A. had a history of making no real friends, being bullied, and an inability to pick up social cues. He could not keep jobs, probably due to his impaired social reciprocity skills. He also had communication deficits: his pragmatics were impaired; his childhood social skills were minimal; he had a cold, unresponsive facies; and jailers found him "weird." Mr. A. also showed a rather encompassing preoccupation with firefighting: he loitered in his car (not socializing) at the fire house; he stole a credit card to get firefighting paraphernalia; and he set a fire to redeem his deteriorating marriage. Therefore, he qualified for restricted, repetitive, stereotyped patterns of behavior, interests, and activities.<sup>2</sup>

Mr. A.'s mindblindness was manifested in a myriad of ways: as a child he missed social subtleties; he talked publicly about how he would use the insurance money, which was very inappropriate, given the death of his daughter; he denied stealing and using his relative's credit card, with overwhelming evidence to the contrary, which indicated an inability to appreciate how others would perceive the situation. Therefore, he lacked the capacity to appreciate that others would detect his lying. His belief that he had friends and was popular among his peers reflected an impaired ability to appreciate how others viewed him. His case also suggests a lack of internal coherence, in that he found it easy to rationalize his crimes as a way to start life over again while demonstrating a serious disconnection with his social environment. His fixation on fire-related themes provides a dramatic illustration of the disabling nature of repetitive and abnormally focused interests that characterize persons with hfASD.

Mr. B. demonstrated marked deficits in social reciprocity, in that he was unable to make friends or develop amorous relationships. Behavioral abnormalities associated with mindblindness were reflected in his inability to appreciate how his touching the students would be perceived both by the children and by others in his environment. His compulsive touching was consistent with repetitive and stereotyped patterns of behavior.<sup>2</sup>

Mr. C. presented with a history of poor socialization skills, no friends, and an inability to keep a job, consistent with deficits in social reciprocity. His pragmatic communication deficits were manifested

in his unusual facial expressions and his unclear communication habits with both deaf and hearing people. He demonstrated a fascination with elevators, construction sites, and soliciting sex to the point where he was arrested for violating laws in his efforts to access them. He compulsively and indiscriminately solicited sexual contact from generally hostile potential partners, reflecting ToM deficits associated with the circumstances of his solicitation and with his hfASD. ToM deficits are not pathognomonic of autism and have been observed in other conditions such as psychotic disorders and deafness.<sup>49,50</sup> Therefore, Mr. C.'s deafness may have contributed to his ToM deficits.

## Nonsexualized Violent Crimes and hfASDs

As previously stated, criminal activity in individuals with hfASD psychopathology may be divided into (1) deficits in Theory of Mind abilities and/or (2) abnormal repetitive narrow interests. Violent behavior among children, adolescents, and even adults with AD is not uncommon.<sup>13</sup> hfASD individuals charged with crimes may present with nonsexual violent behavior. Among adults, several cases of nonsexualized violent behavior ranging from assaults to serial killing have been described in the psychiatric literature.<sup>5,6,10,11,46,48,51</sup> For example, Murrie and colleagues<sup>10</sup> reported an attempted murder by a 44-year-old man who shot the psychologist who was performing a child custody evaluation. The perpetrator feared the evaluation would be unfavorable, and he believed shooting the author of the evaluation would improve his chances of maintaining custody. Baron-Cohen<sup>6</sup> described the case of 21-year-old John, who attacked others whenever his routine was disturbed. He had a 71-year-old "girlfriend" whom he had recurrently assaulted shortly after ruminating about his jaw.

Abnormal repetitive narrow interests appear to be a most important domain associated with criminal activity in individuals with hfASD. The universe of repetitive narrow interests that may be associated with criminal activities in hfASD is likely to be very large. For example, a well-known case involved a man fixated on city transit-related activities. He had been arrested for driving subway trains and buses without authorization and flagging traffic around New York City Transit Authority construction sites.<sup>52</sup> Repetitive narrow interests typical of AD

have also been documented in association with stealing and hoarding behaviors.<sup>53</sup> Stalking refers to focused, repetitive, and persistent following that is unsolicited and unwanted by the person who becomes the object of attention. hfASD cases may be found among certain stalkers. The “incompetent suitor” who feels isolation and loneliness and is socially inept, with an obsessive preoccupation with and sense of entitlement to the victim and indifference to the wishes of the victim may have hfASD.<sup>54</sup> Reported stalking cases among persons with hfASDs have included following and touching, kidnapping and bondage, and attempted murder.<sup>55</sup>

### hfASDs and Arson

Arguably, fire-related crimes are among the most frequently associated with hfASD. In a previously discussed study, Siponmaa *et al.*<sup>29</sup> reported that 10 (63%) of 16 crimes of arson were perpetrated by subjects with hfASD diagnoses. This was the only crime category in which these diagnoses were over-represented. The case of Mr. A. dramatically highlights a fixation with themes involving fire that led to a serious crime.

Several case reports associated with arson and hfASD have also appeared in the psychiatric literature, and the contributory factors appear to vary in each case.<sup>10,51,56</sup> Everall and Lecouteur<sup>56</sup> described a 17-year-old, diagnosed with AD at age 10, who recurrently set fires to watch the flames, demonstrating a repetitive narrow interest leading to antisocial behavior. Barry-Walsh and Mullen<sup>51</sup> reported three cases of arson in hfASDs. Two cases involved an absorbing interest in fire. In a third case, the perpetrator burned down a radio station whose signal prevented him from listening to his preferred channel. Murrie and colleagues<sup>10</sup> also described a subject who committed arson after brooding for approximately a year about injustices he had suffered. He had been bullied as a child. His arson victims had no connection to his youthful tormentors. He felt that small details of the target homes reminded him of the homes of the children who had bullied him years before. He decided on arson for revenge after seeing a news report about an arson case. He had had no psychiatric diagnosis prior to his forensic evaluation. The perpetrator could not appreciate that his actions had no impact on those whom he wished to punish. He had focused on the parts rather than the whole:

the home details rather than the lack of any relationship of the targeted homes to his tormentors.

### Sexualized Violent Crimes and hfASDs

Criminal activities associated with ToM deficits may also be linked to sexual crimes. Although the study of sexual expression in hfASD is in its early stages,<sup>57,58</sup> the emerging literature suggests that a defective capacity to attain socially sanctioned sexual release can underlie certain sexual offenses in some individuals who have hfASD. The cases of Mr. B. and Mr. C. exemplify a common type of sexually maladaptive behavior. Deficits in social reciprocity resulted in sexually inappropriate behavior, associated with “cluelessness” when interacting with potential sexual partners. Mr. B. failed to appreciate the impropriety of touching female adolescents. His inappropriate body contact with the victims in the presence of others is consistent with a fundamental inability to appreciate socially appropriate behavior, rather than sophisticated criminal sexual behavior. Mr. C.’s recurrent and indiscriminate soliciting of sex from uninterested males of another race in public restrooms demonstrated that he had no appreciation of the fact that heterosexual males would be offended by such an approach and might react to him violently. He also had little or no appreciation of the illegal nature of his propositioning.

Murrie and colleagues<sup>10</sup> reported a similar case of a 27-year-old male who was arrested for sexual contact with a minor after the perpetrator went to the police station to report the minor had stolen his property. The perpetrator had a long history of inept social attempts to obtain sexual contact. These included taking neighbors shopping for lingerie and letting women use his home for drug transactions. He consented to having sex with a doll before a mocking audience in the hopes that the women in the audience might become aroused and decide to have sex with him. He had no previous psychiatric diagnosis.<sup>10</sup> This man apparently lacked the capacity to appreciate many aspects of social situations, including how others would perceive his behavior, the fact that he was the butt of jokes, and that his pitiful attempt to win women by having sex with a doll would in fact only alienate them.

Sexual crimes by individuals with hfASD can be paraphilic in nature.<sup>5–10,12,13,48</sup> Although several types of autistic psychopathology may underlie the sexual abnormalities and associated sexual offenses

associated with hfASD, arguably a most common paraphilic component associated with hfASD is fetishistic in nature,<sup>57,58</sup> a process that operates by focusing on the objectification of others.<sup>2,47</sup> Some cases of sexual serial killing, such as that of Jeffrey Dahmer,<sup>48</sup> appear to involve repetitive dehumanization of people—viewing them as disposable objects or as objects that can be literally deconstructed, resulting in the mutilation of the victims.<sup>47</sup>

### hfASDs and Remorse

Because persons with hfASD have difficulties appreciating the subjective experiences of other persons, there may be a lack of intersubjective resonance, or empathy.<sup>20,59</sup> This, in turn, may compromise the experience of remorse. Judges and juries find expression of remorse highly relevant to sentencing. Therefore, individuals with hfASDs who engage in abnormal social displays of affect and a diminished capacity for empathy and remorse may be at substantial risk of offending judges and juries. Traditionally, forensic clinicians have been called on to educate legal personnel about the significance of aberrant displays of remorse, often in relation to psychopathy. Therefore, in cases involving hfASD, it may also be necessary to explain that a lack of remorse can be associated with hfASD, a neuropsychiatric developmental disorder with a high degree of heritability. The genetic heritability of ASD has been estimated to be approximately 90 percent.<sup>60</sup> However, it should be emphasized that environmental factors such as bullying by others, excessive noise level, family instability, and the presence of antisocial individuals may also predispose persons with hfASD to engage in antisocial behavior.<sup>13</sup> Also, converging information from many neuroscientific investigations strongly supports a neuropsychiatric basis for ASDs, including for AD.<sup>61–63</sup> However, it must be emphasized that the psychiatric literature also suggests deficits in the experience of remorse and empathy in psychopaths.<sup>64</sup> Therefore, Antisocial Personality Disorder and related psychopathology<sup>64,65</sup> must be considered in forensic psychiatric evaluations of individuals with hfASD. The two conditions are not mutually exclusive, and it may be that psychopathic loading in an hfASD proband can enhance the likelihood of criminal behavior.

### hfASDs and Criminal Responsibility

Courts in the United States and abroad vary in the admissibility of hfASD as a relevant defense. In terms of criminal responsibility, the broad range of impairment that is present in those with hfASDs may result in substantial differences of opinion regarding whether hfASDs defendants meet the threshold of having a severe mental disease. For example, the Missouri Court of Appeals overturned a circuit court opinion that had prevented a defendant charged with murder from presenting evidence that he suffered from Asperger's Disorder, including expert testimony from three psychologists. The defendant contended that his condition explained his interest in violent books; that his poor motor skills rendered him incapable of performing the stabbing; and that his naiveté left him gullible and vulnerable to being identified as the perpetrator by his peers. The court of appeals held that “denial of the opportunity to present relevant evidence negating an essential element of the state's case may constitute a denial of due process.”<sup>66</sup>

A burgeoning neuropsychiatry of hfASDs suggests significant alterations in brain functioning associated with social cognition in these disorders.<sup>63,67,68</sup> Therefore, inclusion of a neuropsychiatric perspective may help clarify the neuropsychiatric basis of social cognitive deficits in hfASD, which may be of potential relevance to culpability. Various brain-imaging studies suggest that several brain areas thought to be involved in social cognition, including the amygdala, the prefrontal cortex, and the fusiform gyrus,<sup>67,68</sup> are affected in ASDs. Therefore, understanding potential neuropsychiatric abnormalities associated with ToM deficits (for at least some hfASDs) may be relevant to understanding some criminal behavior.

### Future Directions

Preliminary findings indicate that hfASDs are over-represented in criminal populations relative to their prevalence in the general population. However, more comprehensive studies are needed to confirm these findings. As forensic clinicians become familiar with diagnostic paradigms for these disorders, more comprehensive and systematic approaches will be needed to identify and assess individuals with hfASDs. Further research should systematically assess various domains of potential psychiatric-legal

value, such as capacity for empathy and remorse, risk factors for psychopathy, and impulsivity. Theory of Mind factors such as intentionality may be highly relevant to issues related to degrees of culpability. Heretofore, ToM research has focused on child populations. Therefore, new instruments must be developed to assess ToM capacities in both hfASDs and in other psychiatric disorders known to be associated with ToM deficits.

As the nature and severity of brain abnormalities in hfASD are clarified, the knowledge gained is likely to influence solutions to questions of psychiatric-legal relevance to criminal responsibility. As forensic clinicians become more aware of the complex biopsychosocial nature of hfASD, our ability to describe the contribution of autistic psychopathology to criminal conduct will expand.

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