

Emerging Perspectives on Adolescents and Young Adults With High-Functioning Autism Spectrum Disorders, Violence, and Criminal Law

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As the prevalence of autism spectrum disorders (ASDs) has increased, attention has shifted toward consideration of ASDs in adolescence and adulthood, as well as public health repercussions for this population. Since the social and emotional deficits within ASDs may be salient during incidents of unintended criminal or violent behavior, one area of focus is involvement of adolescents and young adults with ASD in the criminal justice system. Without a thorough understanding of how and why individuals with ASDs may exhibit criminal behavior, judicial and legislative state systems have begun to develop policies lacking a substantial evidence base. In this article, we attempt to synthesize the literature on one type of ASD (high functioning) and criminal behavior. Three specific deficits characteristic of individuals with ASDs (theory of mind, emotion regulation, and moral reasoning) are examined as potential confluent forces leading to criminal behavior among individuals with ASDs. Legal and policy recommendations are presented.

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Asperger's disorder (AD) and high-functioning autism (HFA) are two high-functioning subtypes of

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autism spectrum disorder (ASD) in which individuals have average to above average intelligence and tend to have normal speech and language development (particularly in AD), but display atypical development of social reasoning and intuitions. Persons with either AD or HFA can be understood as high-functioning persons on the autism spectrum. Given the questionable diagnostic distinctions,^{1,2} we use the term high-functioning autism spectrum disorder (HFASD) throughout this article to refer to these groups generally, except in cases in which the cited literature refers specifically to AD or HFA. These interpersonal disorders, along with the other disorders within the autism spectrum, have shown a marked increase in incidence in recent years.^{3,4} Individuals with HFASDs tend to be deficient in several social domains including social reciprocity, developing and maintaining peer relationships, and nonverbal cue use and recognition.⁵ Similarly, individuals with HFASDs have a higher incidence of

comorbid conditions, including severe social anxiety and depression,^{6,7} than their typically developing peers. These deficits lead to impairment in social-emotional functioning that can have detrimental effects on quality of life.⁸

Most research on the incidence of HFASDs in criminal settings has been published in the past 10 years and highlights provocative associations between the deficits in individuals with HFASDs and violent crime. Some recent studies have indicated a higher prevalence of AD in maximum security hospitals (relative to prevalence in the general population)⁹; unique forensic profiles¹⁰; potentially increased violent crime and associated psychiatric comorbidity⁷; an infrequent history of illicit drug use, but a greater history of violent behavior^{11,12}; increased possible sexual offending¹³; and questions of exculpatory fitness¹⁴ among law-breaking individuals with HFASDs. While not suggesting that an HFASD diagnosis is sufficient to invoke mitigation, these findings support the need to understand the characteristics of individuals with HFASDs that might contribute to law breaking and to use those characteristics to parse out legal and intervention-driven policy recommendations.

Efforts to understand the link between HFASDs and violent crime have already manifested in the U.S. legal system. Since 2008, state legislative policies and judicial decisions have considered the presence of an HFASD diagnosis as a factor in making guilt and competency determinations. For instance, in *State v. Burr*,¹⁵ the New Jersey Supreme Court vacated an assault conviction and ordered a new trial after determining that the defendant's AD diagnosis was relevant to his defense and improperly excluded at trial. California and Florida have criminal statutes explicitly referencing an autism diagnosis as a possible basis for finding a defendant incompetent to stand trial.^{16,17} The New Jersey statute goes so far as to mandate expert evaluation of defendants suspected of carrying a diagnosis of autism, and, upon a finding of incompetency, requires such experts to produce a report with specific training recommendations that would allow the particular defendant to attain competency. These legal determinations highlight the pressing need for evidence-based policy recommendations for considering criminal behavior committed by individuals with HFASDs.

In this review, we first address the body of literature related to HFASDs and criminal behavior.

Next, we posit three areas of characteristic, but non-diagnostic deficits—theory of mind (understanding of others' mental states), emotion regulation, and moral reasoning—as causally relevant to violent criminal activity among individuals with HFASDs. (These deficit domains were chosen after exhaustive PsychInfo and PubMed searches focusing on the existing empirical literature were conducted.) Finally, we present legal and policy recommendations in view of the reviewed literature.

Violent Crime Among Individuals With HFASDs

According to his parents, about one year before the crimes AB became increasingly irritable and verbally aggressive. During this time, he tended to isolate himself more often, to purchase numerous pornographic magazines, and to ruminate about episodes during his childhood in which he believed schoolmates mistreated him. During evaluation, AB described the year prior to his offense as a period in which he became increasingly preoccupied with those who had wronged him and increasingly convinced that he needed to avenge himself. He reportedly considered burglary for revenge, but later began to fantasize about fire-setting. When AB saw an arson report on the news, he decided that firesetting was the best way to solve his problems [Ref. 10, p 62].

In recent years, media attention to criminal behavior among individuals with HFASDs has raised public alarm over a possible link between such behavior and these diagnoses. Reports across the nation have raised speculation over the link between HFASDs and violent crime,^{18,19} often implying a causal connection between the population and violent behavior, despite a lack of persuasive empirical evidence to this effect.

The authors of the earliest known review of the link between AD and violent crime concluded that no such connection exists.²⁰ In a more recent review, the determination was that the link is inconclusive and is supported by only 11 of 147 studies on AD and violence when the strictest inclusion criteria are used.²¹ However, other work suggests that there may be unique features of ASDs that are important to consider when violent crime is committed by individuals with HFASDs. Several case studies of young adults have indicated that certain diagnostically relevant traits among individuals with HFASDs, such as impaired social understanding and restricted empathy, may lead to violent criminal behavior in specific provocative circumstances.^{10,13,14} A recent small-sample study indicated a reduced incidence of

law breaking among individuals with HFASDs,¹² but the same study also demonstrated an increased history of violent behavior and criminal damage in the same sample. In other words, while the overall rate of criminal behavior diminished, violent behavior and damage associated with this behavior increased. This finding is consistent with that in a recent large-scale review suggesting increased prevalence of aggression among youth with HFASDs.²² Overall, there is no indication in the current literature of an increased risk of violent criminal activity among individuals with HFASDs. However, the described research demonstrates the presence of at least some extant relationship that should be considered, although further research with large representative samples to validate the risk remains necessary. (While this risk may also exist among youth and children with HFASDs, a thorough evaluation of such a risk and the legal and policy implications for the juvenile justice system is beyond the scope of the present review.)

Understanding the potential link between HFASDs and violent crime is necessary both descriptively and legally. Several case studies have examined these possible links through the lens of existing diagnostic criteria, particularly specialized interests, lack of social understanding, and deficient empathy.²³ Barry-Walsh and Mullen¹⁴ presented several forensic cases of individuals with HFASDs that can be interpreted as repercussions of specialized interests or lack of social understanding. Schwartz-Watts²⁴ notes the importance of considering the individual's stereotyped interests in several murder cases. Murrie *et al.*¹⁰ noted several cases in which deficient empathy and social naïveté contributed substantially to law-breaking behavior (e.g., in one case, an individual believed he could attract sexual partners by engaging in public performance of bizarre sex acts with an inflatable doll). Following a social-cognitive model, Baron-Cohen²⁵ and Kohn *et al.*¹³ presented individual case studies of violent law-breaking in individuals with HFASDs, and argued that the deficient social understanding was attributable to a deficient theory of mind (the ability to understand others' mental states). Although not specifically diagnostic, theory of mind deficits are widely considered central to HFASDs.^{8,26,27}

The same observations are supported by a review of typical motives and triggers of violence in AD.²¹ More than half of the violent acts examined (drawn

from 11 rigorously derived violent cases) were motivated by "communicative and social misinterpretations of other persons' intentions" or sensory hypersensitivity; approximately half of triggers of violence were accounted for by narrow interests in specialized visual appearances, "not getting the right response or being approached in a wrong manner by others," or "ordinary, non-provocative physical nearness"; violence (assaults, arson, homicides) was carried out in an emotionally detached manner (Ref. 21, p 310). A crucial point is that these results are inferred from a small number of cases. Therefore, generalization of these motives and triggers must be undertaken with caution, pending the recruitment of larger samples. While the above diagnostic considerations help to understand that some individuals with HFASDs might commit violent crime, they are less helpful for understanding why. If theory of mind deficits and specialized, stereotyped interests were sufficient for violent law-breaking in the population, the incidences of such activity would grow exponentially, given the frequency with which the same deficits and interests present in individuals with HFASDs. However, the overall rates of violent crime in the population of individuals with HFASDs remain relatively low.^{10,12} So, a consideration of other common factors in HFASDs that may contribute to violent crime is important to describe, and it is necessary to understand the legal implications of such behavior in individuals with HFASDs. Indeed, Newman and Ghaziuddin,⁷ authors of the original 1991 report critiquing the link between AD and violent crime, recently co-authored a review positing a link between some violent behavior and HFASDs in subsequent literature and suggesting psychiatric comorbidities as a possible factor leading to such a connection. They found that most of the literature on AD individuals who commit violent crime indicates that these individuals also have various co-occurring psychiatric problems, including obsessive-compulsive disorder, conduct disorder, schizoaffective disorder, and depression. As the presence of these disorders (with the exception of conduct disorder)²⁸ alone does not confer substantial additional risk of violent crime, they concluded that the finding by no means proves a causal link, but nonetheless provides an area for further examination when evaluating AD individuals who have committed violent crime.

We concur with Newman and Ghaziuddin⁷ that assessment of psychiatric comorbidities may be valu-

able in understanding the possible link between HFASDs and violent crime. However, we contend that there are other factors that are both common to the population and legally relevant that may provide further direction in understanding this link. In the following section, we briefly present the findings of the contemporary literature on theory of mind in young adults with HFASDs to further explore the relationship suggested by Baron-Cohen²⁵ and Kohn *et al.*¹³ We also present two other areas of deficit common in the population, emotion regulation and moral reasoning,^{29,30} that may also help explain how violent criminal behavior may emerge in this population. These are not the only models of deficit that may be relevant to the discussion of violent behavior in HFASD populations. Other models, such as the extreme male brain theory,³¹ weak central coherence theory,³² and executive dysfunction,³³ may also play important contributory roles. We do not suggest that we have provided an exhaustive list of HFASD-related factors that may lead to violent behavior, but rather present a parsimonious model of legally relevant deficits that may at times combine to create a perfect storm of factors leading to such behavior.

Key Factors

Theory of Mind

This man had repeatedly come before the courts for charges of public nuisance and minor assaults. He was also charged with stalking, having harassed and intruded on those on whom he had become fixated. These victims were professionals who had been involved in his care. He would contact them over the phone repeatedly, turn up, and write numerous letters. The letters usually began with a request for help and extended self-revelation but degenerated into threats [Ref. 14, p 99].

Baron-Cohen²⁵ and Kohn *et al.*¹³ hypothesize that theory of mind deficits are implicated in violent crime among individuals with HFASDs. Theory of mind is the ability to understand and represent the mental states of others.³⁴ While theory of mind is deficient in individuals across the autism spectrum, the pattern of deficit appears unique among persons with HFASDs. For instance, most appear able to pass basic first-order (e.g., understanding that another person can hold a false belief about the location of an object) and second-order (e.g., understanding what one person might think about another) theory of mind tasks, suggesting only a likely developmental delay in the emergence of these abilities.^{35,36} However, more recent evidence complicates this picture.

It appears that, at least for persons with AD, the ability to engage theory of mind is present, but may not occur spontaneously and must be explicitly prompted.³⁷ Specifically, Senju and colleagues³⁷ showed that, on an eye-tracking task, people with AD failed to anticipate a behavior on the basis of an agent's false belief. This finding is surprising, because such spontaneous mentalizing may occur even in healthy infants.³⁸

Theory of mind tasks become even more difficult and are failed more often as they become more advanced, such as those involving mental state recognition from eyes,³⁹ a test to identify underlying intentions in a story,³⁵ and a test of understanding of more advanced mentalizing abilities such as irony, persuasion, and social blunders yield a more complex pattern of results.³⁶ These deficits indicate the enduring use of jury-rigged, or hacked,⁴⁰ cognitive pathways for understanding mental states. In addition, such tests yield results showing that individuals with HFASDs tend to have more difficulty inferring mental states than physical states and demonstrate slower response times on such tasks in general.⁴¹ Taken together, these results indicate that adults with HFASDs have consistently greater difficulty in understanding basic as well as higher level mental states and social nuance, especially when having to do so rapidly. It is important to note that unique manifestations of theory of mind are also found in other psychiatric disorders, such as schizophrenia, in which theory of mind may be hyperactive.⁴² While consideration of theory of mind deficits in such disorders is a topic of considerable interest, it is beyond the scope of the present investigation. Thus, we focused on the role of theory of mind among individuals with HFASD, while recognizing that deficits may manifest in other ways in different psychiatric conditions.

These more contemporary findings help to elaborate on the observations of Baron-Cohen²⁵ and Kohn *et al.*¹³ that theory of mind deficits could contribute to violent criminal behavior. Although individuals with HFASDs might be able to understand that others may hold beliefs about objects or even third parties, especially when explicitly prompted, their ability to interpret social intentions and more subtle social nuance (such as persuasion and social mistakes) appears to remain impaired. Critically, they appear to engage in this understanding more slowly, making it difficult to undertake the sort of on-line social processing necessary for spontaneous,

quick, and contextually appropriate social responses. In situations where an individual with HFASDs may be required to respond to a social situation under duress, he may become confused or overwhelmed by a barrage of social information that he cannot readily process.⁴³ This confusion, of course, need not necessarily lead to violence (indeed, it could just as easily lead to increased confusion), but in some individuals, it may precipitate substantial aggression.^{44,45} What differentiates such individuals? This question leads to the second common factor in this population that we hypothesize undergirds the presence of violent criminal behavior among individuals with HFASDs.

Emotion Regulation

The defendant attempted to reason with the neighbor, who was alleging the defendant owed him money for a grill. The victim struck the defendant about the face, hitting his glasses. The defendant retreated to his bedroom where he kept guns. The victim followed. The defendant shot the victim repeatedly, emptying a .38-caliber revolver. He then got another gun from his bedroom and fired another shot into the victim's head [Ref. 24, p 391].

A second area of difficulty for individuals with HFASDs is emotion regulation, or the ability to inhibit quickly and appropriately the expression of strong emotions.²⁹ Behaviorally, deficits in emotion regulation manifest as problems with impulse (usually anger) control, aggression, and often negative peer interactions.⁴⁶ While emotion regulation is an executive function capacity that demonstrates considerable variation between typically developing individuals,^{47,48} it may be especially impaired in populations with HFASD.⁴⁹ Indeed, deficits in emotion regulation have recently emerged as a central nondiagnostic construct associated with autism spectrum disorders (ASDs).⁵⁰

As emotion regulation difficulties in adults can lead to aggression and even violence,⁵¹ a deficiency in this ability among individuals with HFASDs may contribute to findings of a disproportionately increased history of violent behavior among law-breaking individuals with HFASDs.¹² This deficiency could also be seen to lead to more impulsive violent crime in this population. Indeed, in a study by Wahlund and Kristiansson,¹¹ use of murder methods requiring less premeditation (i.e., not using guns or other weapons) was unique to incarcerated murderers with ASDs, compared with those with antisocial personality disorders. The authors viewed this tendency as emerging from odd motives, such as

the intense lifelong desire to stare at flickering flames in an arsonist with AD.¹⁴

It seems, then, that emotion regulation difficulties could potentiate violent behavior in individuals with HFASDs with substantial theory of mind impairment. For instance, theory of mind difficulties may lead to social confusion,⁴³ and such confusion can lead to feelings of frustration and helplessness. Likewise, acting out and aggression may result from unregulated physiological arousal among individuals with HFASDs with poor emotion regulation ability.²⁹ Thus, the combination of the two may pose a particular risk for confused, impulsive, and ultimately violent behavior within this population. Thus, we hypothesize that an interaction between impaired advanced theory of mind and emotion regulation difficulties predicts increased violent behavior in the HFASDs population. The exact nature of this interaction and the conflict between aloneness and social interaction requires further investigation, but may include stress reactions, dissociations, delusions, or transient psychotic episodes. Further, we would expect impairment interactions to be particularly evident among violent law-breaking individuals with HFASDs. Future research should test this hypothesis to help elucidate the connection between impaired advanced theory of mind and emotion regulation difficulties among violent criminals with HFASDs.

Initial Legal Implications

Given the potential role of emotion regulation problems in the perpetration of violent crime by individuals with HFASDs (and the fact that emotion dysregulation is thus more likely to appear in such an individual's defense), it is germane to address the role of emotion in criminal law. Forensic psychiatrists have long understood the importance of disordered affective states in mediating judgments of competence in legal proceedings.^{52,53} Similarly, legal theorists Kahan and Nussbaum⁵⁴ presented a compelling argument that the optimal conception of emotion in law is best understood with reference to an evaluative view of emotion. This view understands emotions to represent cognitive appraisals that are morally formed (and can be morally shaped) and stands in contrast to the mechanistic view, which sees emotions as thoughtless, inchoate forces that drive behavior. The evaluative position argues that emotional disposition of a defendant can, and, in practice, does,

influence the determination of an individual's guilt, while it should not, and, in practice, rarely does, influence sentencing. How then might these two conceptions of emotion in law view pathological emotion regulation difficulties in individuals with HFASDs who commit violent crime? Kahan and Nussbaum⁵⁴ argued that the mechanistic view would do so simplistically, either deciding that emotional impulsivity makes such individuals unacceptably dangerous to society, or deciding that the presence of emotion in their crimes exonerates them. The evaluative view, however, by not radically divorcing emotions from cognition, acts in a more complex, neurologically sound,⁵⁵ and ecologically representative manner, by incorporating into the rendering of a verdict an understanding of the motives and strategic logic driving that emotion.

However, up to this point, it seems that the motives that can be considered likely to be presented in the case of violent crime perpetrated by an individual with HFASDs are overwhelming social confusion and frustration,⁴³ or odd motives,¹¹ within which the social confusion may be subsumed. There remains a need, then, to address whether the moral reasoning with which individuals with HFASDs derive their odd motives is sufficiently normative to be assessed fairly via an evaluative view of emotion in law. Thus, we arrive at our third key factor: moral reasoning.

Moral Reasoning

The problem began when the family moved to another city. The radio station with which he was fascinated was difficult to access from their new residence. He developed a complex system of aerials, which finally enabled him to tune in successfully. After a year of listening, a local religious radio station set up a new broadcast on the frequency close to his favored station. This interfered with his listening between the hours of 7 and 10 each evening. He wrote a number of letters to the radio station asking them to stop interfering. He received blessings and Christian tracks [*sic*] in response. Following a further unsuccessful communication, he walked to the radio station carrying a can of petrol, poured the petrol around the station and burnt it down. He had no regrets for his actions and was puzzled what all the fuss was about. He would have successfully avoided detection except that he proudly informed his mother the next morning that he was responsible for the destroyed radio transmitter, a picture of which appeared in the local newspaper [Ref. 14, pp 100–101].

A final, more recently investigated area of putative deficit in individuals with HFASDs is impaired moral reasoning, or a social-cognitive process by which an individual judges an action to be worthy of

praise or blame. While similar to the legal notion of appreciation, moral reasoning may be seen as a more fundamental and specific capability, as it precisely encompasses normative evaluation of one's own actions and the actions of others in light of the behavior as well as the mental states of agents. Though some studies have demonstrated intact moral reasoning in individuals with HFASDs despite theory of mind deficits (suggesting that mentalizing is not a prerequisite for the capacity to make moral distinctions),^{30,56} others have found apparent impairments. In non-HFASD persons, using transcranial magnetic stimulation to impair temporarily the part of the brain centrally implicated in performing theory of mind tasks (the right temporoparietal junction) produces a deficit in moral judgment such that persons do not consider beliefs and intentions and rely more on consequences.⁵⁷ Recent evidence makes the crucial point that the same pattern is present in subjects with HFASDs, such that they fail to withhold blame in situations where accidental harm is committed, suggesting that beliefs, desires, and intentions are relatively withheld from moral judgment in this population.⁵⁸

This recent evidence is consistent with prior findings suggesting deficits in moral judgment. Keel⁵⁹ examined a group of adults with HFASDs and found significant impairment in moral reasoning, with correlations between this impairment and severity of autistic symptoms and adaptive socialization deficits. She concluded that this supports a theory of mind deficit in adults with autism, noting that sophisticated moral reasoning may require the ability to compare one's mental state prospectively with that of others. Grant *et al.*⁶⁰ found that children with HFASDs were as likely as typical peers to judge motives as important in culpability and to see greater culpability in individuals who harmed others relative to those who harmed property. However, the children with HFASDs provided significantly poorer justifications for their decision to find an individual culpable (e.g., they simply reiterated the story they were told) relative to typical peers and peers with moderate learning difficulties. Takeda *et al.*⁶¹ found intact external (subject to predetermined rules) moral reasoning, but impaired internal (autonomous) moral reasoning, particularly higher-level autonomous-altruistic moral reasoning, among children and adolescents with HFASDs relative to typical peers; they also found a correlation between in-

ternal moral reasoning and verbal ability in the HFASDs population. These results indicate that subtle deficits in moral reasoning may exist in individuals with autism, especially among those with more limited verbal ability or socialization.

It has been suggested³⁰ that moral reasoning among individuals with HFASDs does not adhere to the same pathway of affective intuition and personal engagement^{62,63} that is evident in typical populations; rather, it may be that it is a hacked-out process³⁶ by which individuals with HFASDs are able to respond to already-learned morally relevant scenarios, but are not subsequently able to generate novel moral distinctions in new and unfamiliar scenarios.⁶⁰ Similarly, they may rely more heavily on explicit justifications to attain sympathy for those who have committed transgressions.⁶⁴ Thus, moral reasoning in individuals with HFASDs may be a particularly, perhaps uniquely, *post hoc* cognitive process,⁶⁵ though it may lack the sort of *a priori* tilt that otherwise guides normative moral reasoning. Though not a novel suggestion, broader consideration of this difference in moral reasoning in forensic contexts will be vital for just treatment of individuals with HFASDs who must interact with the legal system. It is thus imperative that future research explore the process of moral reasoning in individuals with HFASDs, as an understanding of this process is necessary to make further descriptive claims about how to understand moral violations in these individuals, as well as for driving interventions that may either respond to or circumvent these violations.

Such research, as well as its application at the individual level by forensic psychiatrists, should proceed sequentially through domains of moral reasoning that could be impaired in individuals with HFASDs and, when available, use existing measures. For instance, individuals could first be administered a broad series of questions assessing whether they understand the difference between clearly good and bad acts (e.g., hitting and stealing) and believe that good acts should be rewarded and bad acts punished.³⁰ Next, they could be assessed in terms of their moral reasoning regarding different types of aggression (e.g., physical and relational) using an instrument such as the Moral Reasoning about Aggression measure.⁶⁶ Finally, individuals' reliance on the strength of justification in rendering sympathy could be assessed with a series of transgression scenarios with pre-established weak and strong justifications

for sympathetic response. Thus, the depth and contours of the idiosyncratic moral reasoning of individuals with HFASDs could begin to be elucidated and isolated, providing clearer direction for its consideration and application in forensic contexts.

This particular process of moral reasoning may help account for the odd motives seen in violent law-breaking individuals with HFASDs,¹¹ such as shooting a consulting psychologist to render a more favorable verdict in a custody dispute.¹⁰ A picture emerges of the situations in which violent criminal activity may occur in this population: an individual with particularly poor theory of mind and emotion regulation is placed in an unfamiliar and overwhelming social scenario. He misperceives the intentions of another individual as hostile (perhaps when such an inference would be justified by observing another agent's actions alone, but would be unjustified when considering intentions, beliefs, and desires), becomes upset and unable to regulate this emotion sufficiently, and is unable to place the situation into his moral rubric; lacking the guidance of internal moral reasoning, and the lodestar of an external moral referent, he is thus left without any means of directing his actions. He then lashes out, perhaps impulsively and aggressively, to silence the source of his frustration and confusion. Subsequently, during questioning, he lacks the cognitive structure on which to hang his justification (perhaps simply repeating the charges against him to the inquiring officer or lawyer) and is thus less able to make sense of what has happened to himself or to others.

Initial Legal Implications

The previous scenario illustrates the interaction among the impairments of theory of mind, poor emotion regulation, and limited internal moral judgment leading to impairments in moral reasoning under conditions of conflict or ambiguity. Together, these may decrease the capacity of individuals with ASDs to refrain from violent reactions in a variety of emotionally charged contexts.

The importance of moral reasoning is especially highlighted if we again proceed from the evaluative view of law and emotion. On this view, the ability to make an informed evaluation of an individual's culpability rests almost entirely on the degree to which his motives are comprehensible and evident. If an individual is unable to present his motives via a normative process of moral reasoning, it may impair

his capacity to communicate effectively with law enforcement officials, to consult with his defense attorney, and, critically, to self-advocate during legal proceedings. This inability to communicate may lead both the prosecution and the jury to have difficulty in making intuitive sense of the defendant's odd motives, introducing systematic bias into their evaluation of his guilt (e.g., because he may not fit into their existing moral schema).⁶⁷ Thus, while an evaluative view of emotion in criminal law may be more realistic,⁵⁴ is it fair? How should criminal law view violent criminals with HFASDs? Should they receive more lenient punishment or extended sentences? Are there unique preventive policies that can be put into place to inoculate individuals with HFASDs against future criminal activity? In the final section, we address these questions.

Legal Recommendations

The defendant had difficulty recognizing the facial expression and nonverbal cues of his victim, a feature common in Asperger's disorder. . . . He consistently stated that his victim looked as if he was going to harm him and that he was defending himself. He was convicted of murder and sentenced to life in prison. The judge would not allow psychiatric testimony during his trial. He is presently housed in a unit for mentally disordered offenders [Ref. 24, p 392].

In considering the legal implications for violent criminals with HFASDs, it is important to first recall that ASDs are classified as both developmental disorders and mental disorders.²³ Hence, a consideration of how the law might treat criminals with such diagnoses should proceed from a consideration of legal treatment of other similar disorders. The question is, what constitutes similar? In regard to the possibility that they play some role in instances of violent criminal behavior,⁹ HFASDs may be more like psychopathy,¹¹ requiring enhanced sentencing to ensure the safety of the public. Inasmuch as they are developmental, intellectual disorders, HFASDs may be more like an intellectual disability, necessitating special care, the least restrictive environment, and limited sentencing.⁶⁸

Psychopathy

Careful differential diagnosis of HFASDs must rule out confounding cases of delusional disorder or narcissistic and schizoid personality disorder.⁷⁰ However, while a full accounting of the questions related to HFASDs and its differential diagnosis^{70,71} is beyond the scope of this review, an important di-

agnosis with which to contend, due to its charged history and status in forensic contexts, is psychopathy. This disorder is characterized by disregard for the rights of others and violations thereof²³ and presents an increased risk for violent criminal behavior.⁷² Provision of a forensic diagnosis, often using the Psychopathy Checklist-Revised (PCL-R),⁷³ can frequently lead to enhanced sentencing through the implication that the individual is beyond the possibility of rehabilitation^{74,75} and has a specific personality (DSM Axis II) disorder.⁷⁶ Should such a diagnosis be considered comparable with HFASDs? Hans Asperger himself originally designated the disorder that bears his name an autistic psychopathy.⁷⁷

Nonetheless, recent forensically informed studies appear to diminish any perceived similarity. Wahlund and Kristiansson¹¹ found violent criminals with HFASDs to be substantially different in both psychosocial functioning and crime scene characteristics from violent criminals with psychopathic traits. They noted that these findings have implications for the notion of "affective" (impulsive) and "predatory" (planned/instrumental) violence,^{78,79} with predatory violence being a possible defining characteristic of antisocial personality disordered criminals and absent among criminals with HFASDs. Anckarsater⁸⁰ examined the clinical neuropsychiatric traits of a large sample of perpetrators of violent crime and found that, while HFASD traits correlated with PCL-R scores, a construct of superficiality was characteristic of psychopathy and did not correlate with HFASD. He thus concluded that the social disabilities of HFASDs can be operationally disentangled from psychopathy and that they are thus clinically and forensically distinct.

Further evidence of the dissociation of psychopathy and HFASD came from neuroimaging studies that revealed that when individuals with psychopathy respond to emotionally charged moral dilemmas, they evince decreased activation of the affective areas of the brain such as the amygdala (which is normally engaged in these dilemmas by healthy controls).⁸¹ They likewise respond to such dilemmas with increased activation of areas responsible for deliberative reasoning: specifically, the dorsolateral prefrontal cortex (DLPFC).⁸² This psychopathic rational coldness contrasts markedly with the affective frustration, impulsive reactions, and compulsive, ritualistic compensatory behaviors persons with HFASD seem to display. Similarly, the difficulty that individuals with

Table 1 Characteristics of Violence in Asperger's Syndrome Versus Psychopathy

Characteristic	Psychopathy	Asperger's Syndrome
Sensory reactivity	Hypo	Hyper
Interpersonal communication	Manipulative	Naïve
Typical violence	Proactive	Reactive
Reinforcement contingency	Positive	Negative
Relating to violence	Denial	Confession

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HFASDs experience in accurately knowing what others think is distinctly different from the trouble psychopathic individuals have in resonating with how others feel.⁸³

From a review of the literature on AD and violence, Bjorkly²¹ described incidents of violence in AD as involving high sensory reactivity, naïve interpersonal communication, and reactive violence to negative environmental stimuli and resulting in confession, whereas psychopathy involves the opposite pattern in each of these domains (Table 1).

The rational, emotionally detached, predatory, and superficial characteristics of psychopathy, as well as the fact that it is considered a (chronic) personality disorder, facilitate evaluation of the individual's intent and motives. Whether this amounts to rendering psychopathy an appropriate basis for increased sentencing or not,⁷⁶ it seems clear that such features do not apply to HFASDs, and thus provisionally exempt ASD diagnoses from the risk of increased sentencing. Indeed, legal practice seems to corroborate this conclusion, as we found no case in which an ASD diagnosis was used as a basis for enhanced sentencing.

Intellectual Disability

Intellectual disability (ID), formerly called mental retardation, is a developmental and mental disorder characterized by below-average intelligence and impaired daily living skills.²³ A diagnosis of ID may lead to differential treatment within the criminal justice system, as such individuals may be deemed unfit to plead¹⁴ or found to have diminished moral culpability for their crimes due to their impairments.⁸⁴

Though diagnostically distinct from ID,²³ HFASDs nonetheless share important characteristics in forensic settings. First, they are both characterized as developmental disabilities, which may confer dif-

ferential perception of accountability by observers (see below).⁸⁵ Second, they are at risk for false confession and manipulation during interrogation,^{86–88} especially when techniques such as deception are used,⁸⁹ which they are considerably less likely to comprehend.^{90,91} Third, there are questions of exculpatory fitness among individuals with HFASDs comparable to those that arise about ID individuals,¹⁴ as well as related questions of ability to provide accurate testimony.⁹² Indeed, Barry-Walsh and Mullen¹⁴ noted that the broad cognitive capacities required for fitness to stand trial in the U.S. system are particularly unlikely to be met by individuals with HFASDs, as “it would be difficult to imagine an event less likely to be comprehended by an individual” on the autism spectrum than a criminal trial (Ref. 14, p 104). Finally, given their cognitive and emotional social challenges, the likelihood of abuse and victimization is extremely high among both ID and HFASD individuals,⁹³ including adults,^{94,95} even and especially when incarcerated.⁹⁶

With all of this in mind, from a Kahanian perspective, it seems that the bases upon which the motives of those with ID are currently judged to be exempt from the usual standards of prosecution (unreliable testimony, lack of comprehension of charges and the legal setting, and diminished moral culpability) are equally applicable in the case of those with HFASDs. Indeed, it is on this basis that attorneys in a series of cases have argued for either reduced sentencing or dismissal.^{15,19,97} In a similar vein, Haskins and Silva⁶⁹ suggest that special contingences be taken into account in sentencing for persons with AD due to limitations in their ability to express remorse adequately (irrespective of whether they experience it), a feature considered to be important for jury and judge deliberation. Nonetheless, there is no firmly established basis in the literature for how HFASD cases should be handled. Next, we examine a possible framework for the establishment of such a basis.

Not Guilty by Reason of Insanity

The not guilty by reason of insanity (NGRI) verdict exists in various forms throughout the United States. As described in the Model Penal Code,⁹⁸ the NGRI verdict includes provisions for cognitive impairment (CI), or the inability to appreciate that a given act is wrong, and volitional impairment (VI), or the inability to refrain from a given act.⁹⁹ Proceeding from the aforementioned factors putatively pres-

ent in violent criminal activity among individuals with HFASDs (theory of mind deficits, impaired emotion regulation, and limited moral reasoning), one may evaluate the relevance of the NGRI verdict. The CI provision appears to turn largely on an individual's normative understanding of the concept of wrongfulness, as well as its applicability to a given criminal behavior. Although not the case at all times, it seems that the situations that have been described to potentiate violent crime in individuals with HFASDs (overwhelmed by social information, unable to make informed moral decisions by, for instance, judging intent appropriately) may constitute precisely the sort of situation outlined in the CI provision. Conversely, the VI provision appears to turn primarily on the intact ability to control one's behavior, or engage in self-regulation. Though, again, not uniformly the case, it likewise seems that much violent criminal activity among individuals with HFASDs as described above (frustration leading to impaired and ultimately inactive emotion regulation capacity) map fairly neatly onto the VI provision. If the model of violent criminal behavior among individuals with HFASDs presented in this article is truly common, then it should represent an appropriate venue for application of the NGRI verdict. Thus, we are led to concur with Barry-Walsh and Mullen¹⁴ that consideration of the NGRI verdict in cases of violent criminal behavior among individuals with HFASDs is to be recommended based on this review of the relevant literature, which has focused specifically on individuals with HFASD and violent criminal behavior. While such consideration may apply to all criminal behavior among individuals with ASDs, we find it especially relevant to violent criminal behavior due to the severity of the attendant punishment. Notably, Wauhop¹⁰⁰ indicates that this Mind-blindness Exemption for persons with AD is already frequently accepted in English courts (especially when crimes appear to match known idiosyncratic traits of persons with AD), possibly due to the strong ASD research communities and public awareness in that country.

We emphasize, however, that the mere diagnosis of HFASD is not sufficient to sustain an NGRI verdict. Rather, the level of impairment can and must be determined through a case-by-case forensic neuropsychiatric examination, the results of which may be used in the assertion of an NGRI defense at trial. In lesser instances, though, it could be considered a

unique mitigating factor in sentencing or in the plea-bargaining process. In addition, malingering, exaggerated impairment, or the deliberate, antisocial misattribution of an offense to existing but irrelevant ASD impairments must be ruled out.

Policy Recommendations

How then are we to incorporate these considerations into practice that is ethical and serves the best interests of [individuals with HFASDs] and the courts? Raising issues of disability and unfitness does not inevitably lead to findings which promote either individual justice or wider community interests, especially where the offending is minor. Courts and solicitors (as well as psychiatrists) are quite capable of exercising pragmatism and discretion toward a goal consistent with the interests of the individuals concerned as evidenced by these five cases. However it behoves [*sic*] us to draw to the courts' attention the obvious: that patients with Asperger's Syndrome suffer from mental disorder and that their offending and subsequent disposition must be placed in this context [Ref. 14, p 106].

We have thus far reviewed the prevalence of and potential for violent crime among individuals with HFASDs, as well as a confluence of factors that could produce the perfect storm that facilitates such behavior in a given individual. We have also reviewed possible legal responses to this criminal behavior and have made recommendations based on the literature. We now turn to the question of whether preventive policy measures could be enacted to curtail the incidence of violent crime in this population. We present a bilateral education approach to prevention, focusing on law enforcement on one side, and educational mandates on the other.

Education of Law Enforcement and the Defense Bar

Consistent with the evidence presented in this article about emotional and cognitive deficits, individuals with HFASDs (as with other developmental disabilities) are suggested to have related social vulnerabilities that make false confession and manipulation during questioning and interrogation more likely,⁸⁶⁻⁸⁸ especially when techniques such as deception are used.⁸⁹ Indeed, as with individuals with ID,¹⁰¹ it is likely that such techniques would correspond to lack of understanding of *Miranda* rights among those with HFASDs.⁸⁷ These and related eventualities indicate that it is imperative to maximize the probability of fair and equal treatment of individuals with HFASDs who are subjected to questioning by law enforcement officers. Furthermore, it is vitally important that the defense bar be aware of

the particular vulnerabilities of clients affected by HFASDs so that they may formulate an effective legal strategy.

One valuable and effective way to accomplish this is through training and education for law enforcement officials in best practices for interacting effectively with individuals with ASDs, especially those under high stress. Such training programs already exist (e.g. the workshops of Dennis Debbaudt¹⁰²), which apply classroom- and clinic-based communication and behavior management techniques to real-world scenarios in which law enforcement professionals may interact with individuals with ASDs. Similar programs could also be used to educate the defense bar on how to communicate effectively with HFASD clients in stressful situations, such as directly after arrest or at trial. Research is badly needed to evaluate the specific effectiveness of these workshops and determine whether their use and proliferation may be recommended to educate law enforcement officials and defense attorneys regarding the unique needs of individuals with HFASDs.

At minimum, distributing cards identifying ASD and strategies for interacting with an individual with an ASD in crisis could promote more positive interactions between individuals with ASDs and law enforcement personnel. Further, we encourage that legal education and other communication strategies promoted by advocacy groups be made available to adults (parents, paraprofessionals) who can act as points of contact with the law enforcement system.

Legal Education for Persons With HFASDs

Individuals with HFASDs appear to learn specific behaviors most effectively via explicit, rules-based instruction¹⁰³; this type of learning appears to apply to the domain of moral reasoning and behavior as well.³⁰ Given the undisputed fact that at least some individuals with HFASDs will come into contact with the legal system,⁸⁸ specific legal education provided in a nonstigmatizing manner to all children and adolescents with HFASDs would be a valuable tool. This education would provide specific examples of situations in which individuals may find themselves (i.e., by drawing on findings from the existing forensic literature on ASDs). It would also help children and adolescents with HFASDs to be better prepared to act in accordance with their legal interests if they did find themselves in a situation where they encountered law enforcement officials. The inclu-

sion of such education in public schooling, special education, and vocational rehabilitation programs (for adults) could provide a first step toward curtailing future criminal behavior by helping individuals with HFASDs better understand the system and how to avoid exploitation by or accidental violation of it. Of course, longitudinal analyses of the preventive effectiveness of such a program would be necessary. In the interim, experimental institution of legal education for students with HFASDs in postsecondary education is recommended.

Conclusions

ASDs are rapidly becoming one of the most pressing mental health and social problems of the 21st century. As the population increases and ages, so does the need to understand the risks and consequences associated with the symptoms of these disorders and the presence of an increased number of adults in the community with ASD. In this article, we have reviewed the literature on violent crime among adults with HFASDs. First, we have found evidence that suggests a potential risk for aggression (but not necessarily for criminal behavior) in this population and that, when violence does occur, it is often in distinct ways relevant to the symptomatology of HFASDs. Next, there are several core nondiagnostic features, including theory of mind deficits, poor emotion regulation, and impaired moral reasoning, that may interact to potentiate the commission of violent crime by an individual with HFASDs. We have emphasized the way that affective and cognitive dimensions interact in producing vulnerabilities to violence. We have reviewed the possible legal consequences for these findings and have concluded that the NGRI verdict is reasonable to consider in these cases. We ended with policy recommendations, calling for training regarding the needs of individuals with HFASDs on the part of law enforcement and mandated legal education for such individuals.

In light of these findings and recommendations, we call for more cross-discipline attention in the academic, legislative, and judicial domains to the need to elucidate the relationship between ASDs and incidents of law breaking, as well as the possible features that may facilitate this relationship, effective interventions, and consistent legal consequences. Though a given individual (as a recipient of a diagnosis, a police officer, or a jury member) may view an AD diagnosis as necessitating a *de facto* not guilty

verdict,¹⁰⁴ it is imperative that society begin to grapple with the question of whether or not it agrees and, if not, what a more nuanced verdict should be.

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