



## Violent behavior in autism spectrum disorders: Who's at risk?☆

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### ABSTRACT

Autism spectrum disorders (ASD) are a range of complex neurodevelopmental disorders characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior. Over the last decade, there has been increased media attention focused on the relationship between ASD and violent behavior due to a number of school shootings and high-profile criminal cases involving offenders with alleged ASD diagnoses. This coverage and these incidents have given rise to public concern and led to the perception that people with ASD are predisposed to violent behavior. In this manuscript, we provide a comprehensive review of the literature bearing on the relationship between ASD and violent behavior, and in doing so, characterize which people with ASD are most likely to be violent and under what circumstances. We conclude that, on the whole, while research findings are mixed, they lend support to the assertion that ASD does not cause violence, and indicate that when violent behavior occurs in people with ASD, it is the result of third variables including poor parental control, family environment, criminality, bullying, or psychiatric comorbidity (e.g., psychosis), that go undetected or untreated. The conclusions of this review have implications for families, clinicians, and policy makers, as a greater understanding of ASD-related violence risk is needed to combat misconceptions about people with ASD and the stigma associated with these conditions.

### 1. Introduction

Recent events, in particular the shootings at Sandy Hook Elementary School in 2012, Isla Vista-Santa Barbara in 2014, and most recently at Umpqua Community College in 2015, have raised concern about a potential link between autism spectrum disorders (ASD) and violence. While media outlets were quick to attribute these violent acts to the purported ASD of the perpetrator, the evidence supporting a causal relationship between ASD diagnoses and violent behavior is mixed. In this manuscript, we comprehensively review the scientific literature pertinent to the association between ASD and violent behavior in adolescents and adults with ASD. In turn, we consider and integrate the results of large and small-scale studies bearing on the relationship between ASD and violent behavior that use various samples (e.g., forensic, convenience, and random) and take into account social-emotional and cognitive deficits related to ASD, as well as environmental and contextual factors and comorbid psychopathology including psychopathy and psychosis. We conclude that while there are particular circumstances under which the risk for violent behavior is increased in people with ASD, ASD per se are not a significant risk factor for violent

behavior. Importantly, while the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) no longer separates autistic disorder (AD), Asperger syndrome (AS), and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) from each other, the majority of studies reviewed herein were carried out prior to the introduction of DSM-5. Therefore, throughout the review, when the acronym ASD is used it is used as a plural term that encompasses all of the pre-DSM-5 Autism Spectrum Disorder diagnoses and, where appropriate, we note the specific pre-DSM-5 Autism Spectrum Disorder diagnosis or diagnoses examined in a given study.

#### 1.1. Autism spectrum disorders

Based on DSM-5 criteria, it is estimated that 1 in 68 US children have an ASD, and males are five times more likely to be diagnosed with an ASD than females (Christensen et al., 2012). These disorders are characterized by two prominent symptom clusters: (1) impairments in social communication and interaction and (2) repetitive patterns of behavior, activities, and interests (American Psychiatric Association, 2013). Within individuals with ASD, there is marked variability in the

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types of symptoms present, the severity of these symptoms, and their impact on functioning. In recognition of this heterogeneity, the DSM-5 introduced severity ratings for both the social communication and the restricted, repetitive behaviors symptoms domains. An excellent review of the history and symptoms associated with the ASD diagnostic entities prior to DSM-5 is available in [Bregman \(2005\)](#).

### 1.2. Violent behavior in ASD

Rates of violent behavior in people with ASD vary widely across studies from 1.5% to 67% ([Långström, Grann, Ruchkin, Sjostedt, & Fazel, 2009](#); [Scragg & Shah, 1994](#); [Søndena et al., 2014](#)). This variability results from the ASD diagnoses included in the study, the types of violence inquired about, and the nature of the sample used (e.g. forensic, community, etc.; see below). In terms of the types of violent crime committed by people with ASD, in line with conviction rates from the general population ([Hippler, Viding, Klicpera, & Happé, 2009](#)), the most common violent offenses are sexual assault ([Murrie, Warren, Kristiansson, & Dietz, 2002](#); [Woodbury-Smith, Clare, Holland, & Kearns, 2006](#)) and physical assault ([Bjorkly, 2009](#); [Schwartz-Watts, 2005](#); [Woodbury-Smith et al., 2006](#)), with physical assault being the most common act. In contrast to the general population, people with ASD are equally likely to physically assault a stranger or relative/caregiver ([Bjorkly, 2009](#)), and to physically assault more than one person during a given episode ([Bjorkly, 2009](#)). Moreover, these violent acts are less likely to be related to the use of drugs or alcohol ([de la Cuesta, 2010](#); [Murphy, 2006](#); [O'Brien, 2001](#); [Wahlund & Kristiansson, 2006](#)).

In the next two sections, we consider the evidence that does and does not support the link between violent behavior and ASD. Following these, we provide a synthesis of the reviewed findings, review both the ASD and non-ASD related factors that may influence violent behavior in people with ASD, and finally, provide a general discussion integrating the reviewed findings across all sections.

## 2. Studies supporting an association between ASD and violence

### 2.1. Case reports

The foundation for the argument that AS is associated with violent behavior comes largely from case reports ([Asperger, 1944](#); [Baron-Cohen, 1988](#); [Mawson, Grounds, & Tantam, 1985](#); [Murrie et al., 2002](#)). For example, [Asperger \(1944\)](#) described four children he diagnosed with autistic psychopathy (a precursor diagnosis to Autism) who had a history of physical aggression, fascination with blood, graphic violent fantasies, or obsession with poisons; [Mawson et al. \(1985\)](#) described a 44-year-old male with AS who repeatedly engaged in violent behavior (e.g. stabbed a girl with a screwdriver, struck a neighbor, assaulted a child); and, [Baron-Cohen \(1988\)](#) described a 21-year-old man with AS who was repeatedly violent towards his 71-year-old girlfriend. The authors of these reports suggested that AS had a significant relationship with violent behavior, noting the social impairment characteristic of AS as a primary factor underlying the violence and asserting that violence is more common in ASD than had been previously recognized.

Building on this work, [Allely, Minnis, Thompson, Wilson, and Gillberg \(2014\)](#) and [Allely et al. \(2017\)](#) conducted ASD-focused reviews of the case studies of serial killers and mass murders, and perpetrators of mass shootings. These authors found that 28.03% of serial killers and mass murders, and 8% of mass shooting perpetrators had ASD features or diagnoses ([Allely et al., 2014](#)). In both papers, the authors noted that the rates of ASD they observed were far greater than the population prevalence rates, and further, given the limitations of the information they could access, that the estimates that they arrived were below the true level of diagnosable ASD in these populations. Yet, despite these findings, the authors concluded that a small subgroup of individuals with ASD is responsible for committing these rare acts of extreme violence.

### 2.2. Violent behavior in hospitalized samples

Two early studies that examined the association between ASD and violent offending in samples of hospitalized ASD patients suggested that individuals with ASD were prone to violent behavior. Specifically, [Tantam \(1988\)](#) found that 14 out of 54 individuals with ASD (23%) had committed a criminal offense, primarily violence against others and, in a sample of 422 patients, [Långström et al. \(2009\)](#) found 7% of patients with ASD had been convicted of a violent crime. In the latter study, when ASD diagnoses were looked at in isolation, the authors found that 20% of people with AS offended, while only 3.2% of people with AD offended. By way of comparison, research on violent offending rates for other forms of serious mental illnesses (e.g., schizophrenia, bipolar disorder, etc.) suggest an overall 1-year violent offending rate of 28% ([Hodgins, Alderton, Cree, Aboud, & Mak, 2007](#)). Thus, although the ASD-related rates presented above exceed the rates of violent offending in the general population, they are lower than the rates observed for other serious psychiatric disorders. This suggests that while hospitalized patients with ASD are at increased risk for violent behavior as compared to people from the general population, they are not at increased risk as compared to patients with serious mental health conditions.

### 2.3. Violent behavior in forensic samples

Several studies have looked at the prevalence of ASD in secure forensic settings and found an overrepresentation of patients with ASD. For example, [Hare, Gould, Mills, and Wing \(1999\)](#) examined the number of individuals with ASD across three secure hospitals in the UK and found a prevalence rate of 2.4% (two thirds had an AS diagnosis) which is ~2.5 times the population prevalence level of ASD [1% ([American Psychiatric Association, 2013](#))]. Of the individuals Hare identified, 32% had committed a violent index offense [i.e., an offense leading to committal to a specialized hospital (e.g. assault)]. The percentage of violent crime for the ASD group was comparable to that for the total population of the high security hospitals setting (35%; [Taylor et al., 1998](#)).

The analyses of two other independent large-scale forensic samples ([Scragg & Shah, 1994](#); [Siponmaa, Kristiansson, Jonson, Nyden, & Gillberg, 2001](#)) also demonstrated that adults and adolescents with ASD are over-represented in forensic hospital settings. [Siponmaa et al. \(2001\)](#) examined the prevalence of ASD in young offenders in Sweden by reviewing case files and assessments of 126 offenders, 15–22 years old, who were referred for forensic psychiatric assessment after committing a serious offense. Results from the case files showed that 15% of the sample had a definite ASD and 12% had a probable ASD. Similarly, [Scragg and Shah \(1994\)](#) examined the records of 392 adult patients in a secure forensic maximum-security psychiatric hospital and found that the prevalence of ASD was four times higher in the hospital (2.3%) than in the general population (0.55%).

## 3. Studies that do not support an association between ASD and violence

### 3.1. Case reports

While the primary evidence used to suggest a link between ASD and violent behavior comes from case reports, when the full corpus of ASD case reports are considered, the strength of the link they suggest between ASD and violent behavior becomes less impressive. Pointedly, in [Ghaziuddin, Tsai, and Ghaziuddin's \(1991\)](#) review of 132 published patient case studies, only three ASD patients (2.3%) had a definite history of violence. Furthermore, [Hippler et al. \(2009\)](#) looked at offending behavior in former patients of Hans Asperger. Of the 177 patients from Asperger's cohort, eight individuals had a total of 33 convictions for a 1.3% offending rate, compared to 1.25% in the general

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