The Journal of Forensic Psychiatry & Psychology

ISSN: 1478-9949 (Print) 1478-9957 (Online) Journal homepage: www.tandfonline.com/journals/rjfp20

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To cite this article: Nadine Salman & Zainab Al-Attar (03 Feb 2026): A systematic review of neurodivergence, vulnerability, and risk in the context of violent extremism, The Journal of Forensic Psychiatry & Psychology, DOI: 10.1080/14789949.2025.2606393

To link to this article: https://doi.org/10.1080/14789949.2025.2606393

Published online: 03 Feb 2026.

THE JOURNAL OF FORENSIC PSYCHIATRY & PSYCHOLOGY
https://doi.org/10.1080/14789949.2025.2606393

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A systematic review of neurodivergence, vulnerability, and risk in the context of violent extremism

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ABSTRACT

This systematic review examines the functional role of neurodivergence, specifically autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD), in the context of violent extremism, radicalisation, and mass violence. While there is no evidence of a direct causal link in the general population, certain neurodivergent traits and experiences may contextualise vulnerability, resilience, and disengagement in unique ways within extremist populations. By synthesising fragmented knowledge across disciplines, this review contributes to a more nuanced understanding of neurodivergence in violent extremism contexts. This review identified 93 publications. Nine key themes emerged, including social and relationship difficulties, hyperfixation and restricted interests, cognitive styles, sensory issues, vivid ideation, emotional difficulties, and the presence of complex needs. These traits and experiences, especially when combined, may shape individual pathways to risk or resilience. These findings highlight considerations for practice and research with neurodivergent individuals within the extremism context. This review identifies significant gaps in the literature, particularly the scarcity of empirical studies and overreliance on open-source case reports. Key priorities for future research include conducting high-quality empirical studies, analysis of functional links based on detailed closed-source records, and the development of a more nuanced understanding of risk and protective factors in neurodivergent individuals involved in extremism.

ARTICLE HISTORY Received 8 August 2024; Accepted 14 December 2025

KEYWORDS Terrorism; extremism; neurodivergence; autism; ADHD; risk assessment

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Although there is no evidence of a direct causal link between neurodivergence and involvement in crime or extremism in the general population (King & Murphy, 2014), there has been increasing attention to the presence of neurodivergent individuals – particularly those with autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD) – within violent extremist populations (Al-Attar, 2020). While prevalence estimates vary, this attention has prompted an interest in whether and how specific traits and experiences associated with these conditions may contextualise vulnerability, resilience, or disengagement in these contexts (Al-Attar, 2020). However, the current evidence base is fragmented, and the functional relevance of these traits in extremist contexts remains poorly understood.

For the purpose of this review, we adopt the terms *terrorism*, *violent extremism*, and *radicalisation* as they are used in the source literature, without imposing strict definitions. While these terms are often contentious (see Neumann, 2013), this review includes papers that self-identify as addressing any of these phenomena, regardless of how they are defined by the original authors. Broadly, however, this review is interested in terrorist offending, violent behaviour associated with terrorism, as well as processes of engagement and support for terrorist violence. In addition, this review also includes literature on mass violence and lone-actor attacks where ideological motivation may be ambiguous or absent. This broader inclusion reflects emerging research suggesting considerable overlap between lone-actor terrorists and mass murderers, who may be better conceptualised as 'grievance-fuelled violence' offenders (Clemmow et al., 2022).

Background

It is important to emphasise that neurodivergence does not directly cause violent extremism vulnerability or risk (i.e. the likelihood of violent extremist outcomes; Monahan, 2012). Throughout this review, we conceptualise the role of neurodivergence as 'contextual' to emphasise how neurodivergent features may affect individuals' experiences, functioning, and behaviour in ways that may, in some individuals, contextualise their vulnerability – rather than directly cause this vulnerability (Al-Attar, 2020). Conversely, these features can also contextualise resilience (i.e. a reduced vulnerability to risk; Lösel et al., 2018) and disengagement in ways that differ from neurotypical populations.

Neurodivergence is broadly characterised by differences in brain function and is often used as an umbrella term for a variety of neurodevelopmental disorders including ASD, ADHD, learning difficulties and disabilities, developmental language disorders, tic disorders, and some acquired brain injuries (HM Inspectorate of Prisons, 2021). The impact of these conditions can differ depending on the individual, their symptoms,

and their characteristics, which can include strengths and skills as well as difficulties. For example, ASD is characterised by cognitive and behavioural patterns broadly defined through two key diagnostic criteria: social communication and interaction challenges; and restricted, repetitive behavioural patterns (World Health Organisation, 2019a). However, beyond these core diagnostic criteria, individuals with ASD may present a range of different characteristics, facets, or symptoms, such as sensory under- or over-sensitivity, vivid fantasy and ideation, and differences in executive function and cognition (Al-Attar, 2019b; National Autistic Society, 2023).

An inspection report examining neurodiversity in the UK's criminal justice system recommended that there is a need for greater awareness, training, and support of neurodivergent needs throughout the criminal justice system (HM Inspectorate of Prisons, 2021). Similarly, this has important implications for the risk assessment and management of neurodivergent individuals at risk of engaging in violent extremism. In line with these recommendations, it is important to provide evidence-based guidance for practitioners to better understand needs, vulnerability, risk, and resilience amongst neurodivergent individuals in extremism contexts. By doing so, practitioners can improve outcomes for neurodivergent individuals in these contexts.

As well as the broader need for greater understanding and support of neurodivergent needs in the criminal justice system, neurodivergence has increasingly been discussed and implicated in counter-terrorism and extremism contexts (Al-Attar, 2020; Warrell, 2024). This is also increasingly being reflected in the frameworks used for the risk assessment and management of violent extremists, some of which now refer to neurodivergence or ASD specifically (e.g. the ERG-R; Kenyon et al., 2025; and the VERA-2 R; Pressman et al., 2018). Similarly, guidance for practitioners working in counter-terrorism has emerged, including recommendations for interviewing terrorism suspects and offenders with autism (Al-Attar, 2018b), brief guidance on potentially relevant features and interventions for individuals with autism in extremism and radicalisation contexts (Al-Attar, 2019a, 2020), and ethical guidance for mental health professionals working in preventing and countering violent extremism (Al-Attar et al., 2018; Lloyd, 2021). Beyond the violent extremism context, guidelines and frameworks have also been developed for risk assessors working with offenders with ASD (Al-Attar, 2018a, 2019b; Shine & Cooper-Evans, 2016; Skelhorn et al., 2023) and ADHD (Al-Attar, 2021; Al-Attar & Abbasian, 2021). While these guidelines are not specific to the violent extremism context, they may be used within this context to help practitioners understand how specific traits can contextualise risk and resilience.

Given this increased attention, it is essential that practice in counter-terrorism contexts is based on reliable evidence. Beyond simply

considering the presence of neurodivergence, it is also important for practitioners to understand how to contextualise vulnerability, risk, and resilience among neurodivergent populations within violent extremism contexts, as well as how best to support them to mitigate risk and encourage disengagement.

Current literature

The information and evidence about the prevalence and relevance of specific mental health and neurodevelopmental conditions in violent extremism contexts is limited. Few studies have disaggregated the prevalence of specific mental health or neurodevelopmental conditions within terrorist populations (Gill et al., 2021). Among those that have, findings suggest that ASD has a higher prevalence among lone-actor terrorists than in the general population (e.g. Corner et al., 2016; Kenyon et al., 2022). However, previous systematic reviews indicate that there is large variation in diagnoses between samples and that no single disorder is directly related to violent extremism (Corner et al., 2021; Gill et al., 2021; Misiak et al., 2019). These reviews also highlight that while several studies have focused on the prevalence of these disorders, few have focused on the relevance and functional role of mental health, neurodevelopmental disorders, and their symptoms or traits in the context of violent extremism (Gill et al., 2021).

The existing literature on neurodivergence and violent extremism is fragmented and straddles several different fields (e.g. clinical and forensic psychology, terrorism studies, political science, and others) in both the academic and non-academic literature. Much of it consists of case studies based on primarily open-source data or theoretical discussions, with limited empirical research and inconsistent terminology (Gill et al., 2021). For example, Al-Attar's (2020) 'theoretically and clinically grounded' framework describes how specific facets of ASD, such as circumscribed interests and obsessionality, can both have a role in push and pull factors to extremism, as well as implications for resilience and diversion. Such theoretical and clinical reviews, while lacking in empiricism, may nevertheless offer valuable insights rooted in clinical experience. However, this fragmented evidence base and heterogeneous literature makes it difficult to synthesise coherent and evidence-based guidance for practitioners, particularly those with non-clinical backgrounds, to differentiate and contextualise the vulnerabilities of neurodivergent individuals.

A recent rapid evidence assessment by Worthington et al. (2021) examined the evidence base to establish whether there were any links between autism and violent extremism, and how autism 'may influence people to engage or disengage in terrorism'. This review found that publications primarily collate knowledge from individual case studies and file reviews.

For example, Faccini and Allely (2017b) use a series of case studies derived from a secondary file review to describe and differentiate the functional connections between ASD symptoms, terrorism, and 'empty terroristic threats'. Although such case studies provide relevant insights, Worthington et al. (2021) concluded that overall, the evidence base in this field is extremely limited and suffers from methodological limitations. While their review provides an overview of the evidence (or lack thereof) examining autism and violent extremism, this focused purely on peer-reviewed empirical research. The rapid assessment approach meant that some of the literature – particularly grey literature, book chapters, and theoretical reviews – was not included. In addition, this review did not examine findings relating to ADHD, due to the limited evidence found in the literature. The present review, while complementary, therefore expands this scope, both in terms of the literature included, and the outcomes and conditions examined.

In light of this, and to maximise the available evidence, this review therefore also includes literature on mass violence and lone-actor attacks where ideological motivation may be ambiguous or absent. This broader inclusion reflects emerging research suggesting significant overlap between lone-actor terrorists and mass murderers, who may be better conceptualised as 'grievance-fuelled violence' offenders (Clemmow et al., 2022). Thus, bringing together and synthesising existing knowledge, findings, and recommendations from the fragmented literature across different fields may increase the pool of available evidence to understand what is (and is not) known about the relevance, functional role, and needs of neurodivergent individuals, particularly those with ASD and ADHD.

Objectives

This research aims to synthesise the existing literature and knowledge on the functional role of neurodivergent conditions, with a specific focus on ASD, the broad autism phenotype (subclinical autistic traits), and ADHD, in the context of vulnerability and risk of radicalisation and violent extremism. Specifically, this systematic review considers the following research questions:

(1) What is known about the functional role of ASD, autistic traits, and ADHD in the context of vulnerability and/or resilience to radicalisation, terrorism, and mass violence?
(2) What is known about risk management of individuals who have neurodevelopmental needs in the context of violent extremist offending?

(3) What recommendations can be made for professional training, skill, and effectiveness in the risk assessment and management of individuals who have neurodevelopmental needs?
(4) What is the quality, extent, and gaps of the existing research in this field?

By synthesising and evaluating the existing literature, this review can help both academics and practitioners to better understand and contextualise vulnerability, resilience, and risk management among these populations. Furthermore, mapping the existing knowledge base can highlight knowledge gaps and promising avenues for future research.

Method

Overview

This research adopts a systematic review approach, based on the PRISMA 2020 guidelines (Page et al., 2021). This review aims to synthesise knowledge from published journal articles, books, reports, and documents, spanning both academic and 'grey' literature (e.g. government and think tank reports). Documents were identified through a keyword search of relevant electronic databases, after which they were screened for inclusion based on predetermined eligibility criteria. Forward and backward citation searches of included documents were subsequently conducted to identify further relevant documents. This research received ethical approval from CREST's Security Research Ethics Committee (SREC). In revising this manuscript, Microsoft 365 Copilot (GPT-4, enterprise version) was used to assist with minor language improvements and summarisation of some limited sections of text within reviewed articles A registered protocol for this review is available on https://osf.io/e592t. This protocol is based on the PRISMA-P framework (Moher et al., 2015).

Deviation from registered protocol

During the screening process, it became apparent that the planned eligibility criteria and search terms used yielded results that were too broad to enable a focused thematic analysis. In addition, this search discovered the existence of several pre-existing reviews examining neurodiversity and general criminality (Allely, 2018; King & Murphy, 2014; Knecht et al., 2015), violence (Bjørkly, 2009; Del Pozzo et al., 2018), and problematic internet use (Murray et al., 2022). Thus, to enable more focused thematic analysis that does not duplicate existing research, the eligibility criteria and research questions were refined

so that only papers specifically relating to terrorism, violent extremism, radicalisation, and mass violence were included.

Information sources

The following electronic databases were searched in July 2021 based on the most recent availability at the time:

(1) OvidSP:
   (a) Embase (1974 – July 2021)
   (b) APA PsycInfo (1806 – June 2021)
   (c) APA PsycExtra (1908 – May 2021)
   (d) Social Policy and Practice (1890 – April 2021)
   (e) MEDLINE (1946 – July 2021)
(2) ProQuest:
   (a) Dissertations & Theses Global
   (b) Publicly Available Content Database
   (c) International Bibliography of the Social Sciences (IBSS)
   (d) Criminology Collection (1975 – July 2021)
   (e) Politics collection (1914 – July 2021)
   (f) Social Science Database
   (g) Sociology Collection (1952 – July 2021)
(3) Scopus

This variety of databases is to account for a) the range of different relevant fields to this research, and b) the grey literature (dissertations/theses, conference proceedings, preprints, and think tank and government reports). There was no time limitation beyond the constraints of individual databases.

As well as these information sources for keyword searches, Google Scholar was used to identify additional papers that cited the papers included after the screening process (forward search). The reference lists of included papers were also manually scanned for additional relevant papers (backward search). Finally, consultation with other researchers, field practitioners, and the authors' prior knowledge yielded additional documents for manual inclusion.

A further database search was conducted in July 2025 to identify any additional papers that were published between July 2021 and July 2025.

Search strategy

The search terms were guided by a) known key papers, b) the second author's field expertise, and c) discussions with other field practitioners. This enabled a broader search for specific terms from emerging fields that are deemed

operationally relevant, such as 'incel' (see Hoffman et al., 2020). Documents were searched by their title, abstract, and keyword fields using the databases listed previously. Prior to finalising these terms, test searches were conducted to ensure their relevance and specificity. These were subsequently refined to narrow the focus of included papers. The search terms are outlined in Table 1.

Eligibility criteria

Documents that met the eligibility criteria in line with the research questions were included for review. Specifically, the eligibility of records was determined based on the following criteria:

(a) **Language**: Documents were excluded if they were not in a language spoken by the researchers (English, Spanish, French, Portuguese, Italian, Arabic, or Bulgarian)
(b) **Publication type**: This review has a broad scope for the types of publications and documents included. This includes journal articles, books and book chapters, government body and think tank reports, dissertations, and theses. This excluded reviews (apart from systematic reviews and meta-analyses), newspaper articles, blogs, letters, and oral presentations (with no written article). Because of the broad scope of empirical and non-empirical publications, there was no specific eligibility criterion linked to their quality.
(c) **Population**: Documents were excluded if the population considered did not relate to ASD or ADHD in individuals 10 years old or over. Here, this definition is interpreted broadly to include the broad autism phenotype – subclinical traits and symptoms associated with ASD – as well as ADHD. These traits include social communication difficulties, restricted interests, sensory under- or over-sensitivity, differences in cognition, and impulsivity (Al-Attar, 2019b; National Autistic Society, 2023; World Health Organisation, 2019a, 2019b). Mental illnesses, specific learning disorders (such as dyspraxia and dyslexia), and motor disorders are beyond the scope of this review, unless specifically linked as a comorbidity. Children below the age of 10 are excluded as they are below the age of criminal responsibility in the United Kingdom.
(d) **Behaviour**: Documents were excluded if the behaviours considered were not related to terrorism, radicalisation, violent extremism, or mass violence. This is to account for literature that is not within the scope of this review – e.g. neurodivergent individuals as victims of crime, and research that purely focuses on diagnosis and treatment of disorders. After further refining the eligibility criteria, documents that referred to general criminality and offending behaviour without extremist or mass violence elements were excluded.

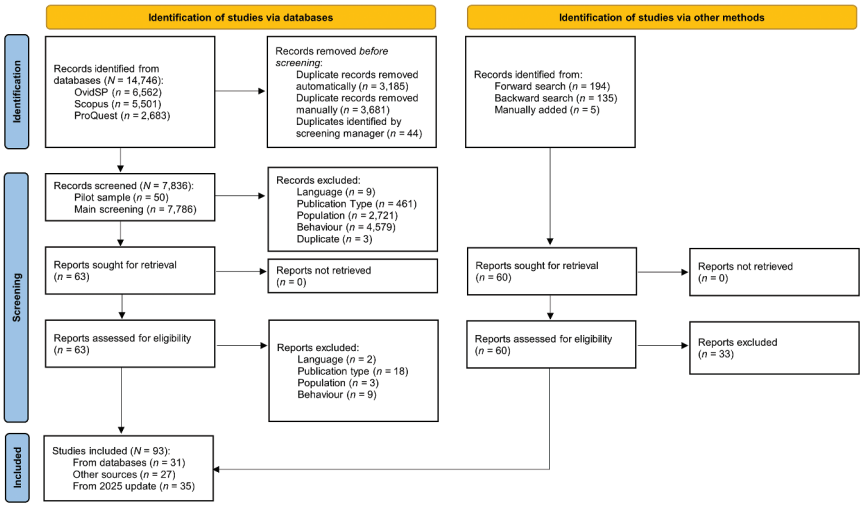

Figure 1. Adapted from "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews," by M. J. Page, et al., 2021, BMJ, 372(71). CC-BY 4.0. For more information, visit: http://www.prisma-statement.org/.

Selection process

The selection process involved the four broad stages outlined below. The process and rates of attrition are shown in Figure 1.

(1) **Identification and deduplication**: First, to identify relevant documents, the search terms outlined in the search strategy were used to search the selected databases. The results of these searches (records containing the title, abstract, and metadata of each document) were deduplicated automatically by the search platform where possible, then downloaded and saved to a reference manager (EndNote), through which further duplicate records were identified and removed based on Bramer et al.'s (2016) method. The deduplicated records were uploaded to a web-based screening manager (Rayyan; Ouzzani et al., 2016). The screening manager also automatically identified and removed further duplicates missed during previous stages.

(2) **Screening on title and abstract**: The deduplicated records were screened on their titles and abstracts via the screening manager. Those that met the eligibility criteria were included for the next stage. Those that were excluded were labelled according to the first observed violated criterion. At the start of this screening process, a test sample of 50 records was coded by the two researchers to test consistency. Discrepancies found at this stage were discussed and used to

Table 1. Search terms used for systematic search.

Neurodevelopmental Disorder (OR)	AND	Behaviour (OR)
Autis*		Radicali*
ASD		Terroris*
ASC		Extremis*
Asperger*		Far right
Neurodevelopmental disorder*		Right wing
Developmental disorder*		Islamist
Pervasive develop*		Jihad*
ADHD		Bomb*
Attention deficit disorder		Attack
Attention deficit hyperactivity disorder		Incel*
		Shoot*
		Murder
		[a]*Violen**
		[a]*Crim**
		[a]*Kill**
		[a]*Offen**
		[a]*Conspirac**
		[a]*Cybercrim**
		[a]*Cyberdevian**
		[a]*Internet addict**
		[a]*Problem* internet*
		[a]*Excessive internet*
		[a]*Compulsive internet*
		[a]*Online addict**
		[a]*Internet disorder**
		[a]*Pathological internet*
		[a]*Social media addict**
		[a]*Problem* social media*
		[a]*Social media disorder*
		[a]*Excessive social media*
		[a]*Compulsive social media*
		[a]*Pathological social media*
		[a]*Gam* addict**
		[a]*Gam* disorder*
		[a]*Problem* gam**
		[a]*Excessive gam**
		[a]*Compulsive gam**
		[a]*Pathological gam**

Note: First row indicates Boolean operators used between each search term. Asterisks (*) are used as wildcards to search for words that start with the same letters (e.g. radicalised, radicalized, radicalisation). Exact operators may vary between databases searched.
[a]Search term subsequently excluded during screening process.

refine the coding process and clarify the eligibility criteria to ensure consistency. The remaining records were coded by one researcher (NS). During this stage, as the decision was made to refine the search terms as shown in Table 1; any document that did not include one of the retained search terms was automatically excluded on the basis of not meeting the 'Behaviour' eligibility criterion.

(3) **Screening on full text**: Full documents were obtained for each record retained based on screening of the title and abstract. The full documents were then screened for inclusion using the same criteria. Documents retained at this stage were used for analysis.

(4) **Forward and backward citations**: The documents retained for analysis were checked for forward citations using Google Scholar. These were manually screened for relevance, and any additional documents added to the dataset for analysis. The reference list of each included document was also scanned for additional relevant documents, which were screened and added to the dataset for analysis. At this point, any additional papers manually identified via other researchers, field practitioners, and the authors' prior knowledge were also added to the dataset for analysis.

Data collection process

For initial screening, summary records (title, authors, abstract, keywords, and publication metadata) of documents were obtained via searches of the online databases outlined previously. Summary records were downloaded directly from these search managers. After screening on the title and abstract, documents that met the eligibility criteria were screened based on the full text. Where possible, these full texts were obtained via university library searches and requests, Google Scholar/search, or via inter-library loans from other universities or libraries. Where this was not possible, texts were obtained by contacting the authors directly. Relevant data items from each document (as outlined in the preregistered protocol) were extracted and compiled in a spreadsheet by NS for analysis.

Analysis

Due to the variety of document types screened for, which included empirical and non-empirical publications; and descriptive, qualitative, and quantitative methods; this review primarily focuses on a qualitative thematic analysis of the documents included. Quantitative synthesis was not appropriate for the documents available, however, where relevant, supporting statistics from included publications are mentioned. The primary aim was therefore to synthesise key emergent themes relating to the primary outcomes under consideration in line with the research questions. The primary outcomes considered in this review are terrorist/extremist and mass violence, radicalisation and engagement with extremist ideologies or groups, and/or resilience and desistence thereof.

An inductive coding approach was used to identify bio-psycho-social factors associated with extremism engagement, including recurring traits, risk and resilience factors, interventions, and contextual factors. This process was informed by emerging patterns identified in the literature, as well as

existing clinical and forensic frameworks, particularly the ICD-11 and DSM-5's diagnostic criteria for autism (World Health Organisation, 2019a) and ADHD (American Psychiatric Association, 2013; World Health Organisation, 2019b), and the Framework to Aid Risk Assessment with Offenders on the Autistic Spectrum (FARAS; Al-Attar, 2018a, 2019b). These frameworks helped to guide the interpretation and clustering of codes into broader themes. The prevalence of themes was considered qualitatively and not quantified, given the heterogeneity of the literature, sample sizes, and the presence of multiple and overlapping themes and samples within each paper.

Given the broad scope of this review, including empirical studies, case reports, and theoretical literature, a formal quality assessment using standardised tools was not feasible or appropriate. Many papers were non-empirical theoretical reviews, and the heterogeneity of study designs for those that were empirical (or had empirical elements) precluded the consistent application of specific criteria. Instead, the qualitative synthesis of the literature comments on the overall quality of the evidence base. Where relevant, quality concerns with specific papers are also commented upon.

Results

Overview

The primary focus of this review was to examine the functional role of symptomology and characteristics in neurodivergent individuals within terrorist, extremist, and mass murderer populations. The documents reviewed highlight several neurodivergent symptoms and traits (primarily relating to ASD) which may contextualise vulnerability, risk, and resilience. These make up the majority of the themes identified in this review. Importantly, these symptoms and traits are not alleged to make neurodivergent individuals inherently more susceptible to extremist involvement – rather, they may partially explain the unique cognitive and behavioural pathways that may contextualise extremist involvement among neurodivergent individuals. While not directly compared in this research, these themes may provide insights into pathways that may differ from those of neurotypical extremists.

Overall, 93 documents were identified for inclusion in this review. Initially, 58 documents were identified from the literature published between 2003 and 2021. An additional 35 documents where identified in an updated search in 2025, reflecting the rapidly growing evidence base in this field. The systematic review table in the Appendix shows that a variety of different publication types were identified, employing different designs/methods. Most common amongst these were literature or theoretical reviews (n = 39), followed by case studies (n = 36), and empirical studies including quantitative, qualitative, or descriptive/survey methods (n = 27); some papers

included more than one methodology. Most included papers mentioned ASD (n = 83), whilst around a third (n = 37) discussed the relevance of ADHD to extremist populations (albeit usually in much less detail). Finally, although different outcomes were identified in the included documents, overall, the majority discussed terrorism, violent extremism, and radicalisation specifically (n = 49), while approximately a third of the sample focused on mass violence with no clear ideological motivation (n = 28). Seven documents discussed both mass violence and terrorism, while nine focused on incel harms.

As outlined previously, following the extraction of the metadata (see Appendix), information from included documents was clustered according to nine broad themes. Within each of these themes, relevant subthemes were identified where appropriate.

Theme 1: Prevalence

This review was not primarily concerned with findings relating to the prevalence of neurodivergence in extremist populations; such group-level findings have limited utility from an operational or clinical perspective when assessing and managing individual cases (Gill et al., 2021). Nevertheless, several of the documents reviewed examined or discussed the prevalence of neurodivergence, particularly ASD, within extremist populations, which may help to contextualise the findings and the populations for which they may be relevant.

Table 2 summarises the documents found which quantified the prevalence of ASD or ADHD among violent extremist or mass murderer samples. Such findings are often interpreted as indicative of over-representation of ASD and ADHD among violent extremist populations in comparison with general population samples (Allely et al., 2014; Corner et al., 2016).

However, several papers found in this review challenge the accuracy of the conclusion that neurodivergence is overrepresented in violent extremist populations. For example, Del Pozzo et al. (2018) point out that other studies have found the prevalence of violent offending among ASD populations to be no higher than that of the general population. Furthermore, they emphasise that only a small subpopulation of individuals with ASD account for the majority of ASD violent offending. In addition, the higher prevalence rates seen in some studies may be dependent on the sample used. Gill et al. (2021) highlight that prevalence estimates for all mental health problems among extremist populations vary greatly depending upon the provenance of the sample. This is also shown here, where there is wide variation between studies using different diagnostic measures and types of samples: estimates for the prevalence of ASD varied between 2% and 54% of the sample, while the prevalence of ADHD varied between 1% and 67% of the sample. This variation raises concerns about the meaningfulness of prevalence statistics.

Table 2. Summary of prevalence data found in identified papers.

Study	Sample	N	Diagnosis	Prevalence
Allely et al. (2017)	Mass shooters	75	ASD (strong evidence)	8%
			ASD (traits)	21%
Allely et al. (2014)	Serial killers and mass murderers	239	ASD ('highly probably or possible')	28%
Corner et al. (2016)	Lone-actor terrorists	153	ASD (diagnosed or strong evidence)	3%
Costello et al. (2025)	Incel forum users	561	ASD (based on AQ-10 scores above 6)	31%
Gray et al. (2025)	Persons referred to a threat assessment centre in Australia for extremism/ grievance-fuelled violence concerns	52	ASD (confirmed or suspected diagnosis)	54%
Hanlon et al. (2010)	'Indignant murder defendants and death row inmates' (including mass murderers)	77	ADHD and/or disruptive behaviour disorder (diagnosed)	36%
Kenyon et al. (2022)	'Radicalised extremists' convicted in England and Wales	437	ASD (diagnosed or traits)	12%
			ADHD (diagnosed)	2%
Lindberg et al. (2012)	Adolescents who made copycat school massacre threats	77	Pervasive Developmental Disorder (including ASD; diagnosed)	10%
			Behavioural or emotional disorders (including ADHD; diagnosed)	23%
Rakhshandehroo et al. (2025)	Female convicts associated with ISIS	14	ASD (diagnosed)	7%
			ADHD/ADD (diagnosed)	7%
Rousseau, Frounfelker, et al. (2023); Rousseau, Johnson-Lafleur, et al. (2023)	Radicalised individuals receiving clinical support from Polarization team	86	ASD (diagnosed)	28%
			ADHD (diagnosed)	10%
Seaward et al. (2025)	Referrals to a UK counter-extremism mental health hub	404	Pervasive and specific developmental disorders, including ASD (diagnosed)	12%
			Behavioural and emotional disorders, including ADHD (diagnosed)	2%
Speckhard et al. (2021); Speckhard and Ellenberg (2022)	Self-reported incels	272	ASD (self-reported diagnosis)	18%
			ASD (self-reported symptoms)	25%
Weisbrot et al. (2023)	Adolescents referred for threats towards school students or staff	157	ASD or PDD-NOS (diagnosed)	15%
			ADHD (diagnosed)	67%
Weenink (2015)	Suspected foreign terrorist fighters	140	ASD (diagnosed or indicated in case file)	2%
			ADHD/ADD (diagnosed)	1%

Indeed, Druitt et al. (2023) argue that prevalence data may be misrepresented in existing studies, which also suffer from methodological limitations due to the lack of meaningful comparison groups.

The differences in prevalence across samples may also reflect different contexts that are not generalisable across cohorts. Based on the studies included in this review, the highest prevalence rates were found amongst samples of individuals referred to clinical and threat assessment services (e.g. Gray et al., 2025; Weisbrot et al., 2023), rather than known attackers (e.g. Corner et al., 2016), which could suggest that neurodivergent individuals may be more likely to be referred for radicalisation concerns than their neurotypical counterparts. It is unclear from this data alone whether this reflects greater (perceived) vulnerability, or whether neurodivergent individuals are more likely to experience stigma and securitisation resulting in referrals (Bronner, 2014). Meanwhile, Del Pozzo et al. (2018) suggest that ASD may be overrepresented in data from specialised forensic settings, making it difficult to make any inferences about those with ASD in the community. In line with this, Bhui et al.'s (2020) study of a community sample of White British and Pakistani people found that ASD was not significantly associated with sympathies for violent protest and terrorism in the general population. Thus, the evidence does not indicate that neurodivergent individuals are inherently more likely to be involved in extremist or violent offending.

It is important to note that this review focuses upon neurodivergence *within* extremist populations, rather than the prevalence of extremism in the general neurodivergent population. Thus, prevalence rates can provide an indication of how many offenders and referrals within the extremism space are likely to have neurodivergent needs. However, despite the larger sample sizes in these studies, they do not provide much information about the relevance of neurodivergence within offenders, particularly regarding vulnerability, risk, or disengagement. As highlighted by White et al. (2017), it is more useful to examine how symptoms and traits can contextualise risk *within* individuals with ASD, rather than examining prevalence alone. This is the focus of the remaining themes identified in this review.

Theme 2: social and relationship difficulties

The primary diagnostic feature of ASD is persistent deficits in social communication and interaction (World Health Organisation, 2019a). It is therefore not unexpected that this feature is often discussed in relation to extremist offenders and mass murderers with ASD; as in Milburn et al.'s (2024) rapid evidence assessment, this was one of the most prevalent themes present in the literature. Al-Attar (2019b, 2020) hypothesises that difficulties in social communication, and difficulties in understanding others' perspectives, can increase social anxiety, lead to difficulties forming relationships, and may

therefore lead to social rejection, adversity, and isolation. This may create feelings of resentment and personal grievance, thus seeing violence as a form of revenge (Allely & Faccini, 2017b, 2019; Faccini, 2016; Faccini & Allely, 2016). Del Pozzo et al. (2018) similarly note that from the general violence literature, violent acts in ASD are often 'motivated by communicative and social misinterpretations of other person's intentions . . . attributing negative intentions to non-provocative behaviour' (p. 55). However, while Del Pozzo et al. (2018) relate these findings to mass violence, it is important to note that these findings were not derived from mass murderer or violent extremist populations.

As outlined previously, the majority of the empirical studies found in this review focused on specific case studies of high-profile attackers, using open-source data to analyse potential links between ASD and terrorism or mass violence – often with multiple different studies focusing on the same case. For example, Adam Lanza, a mass shooter who targeted the Sandy Hook Elementary School in Newton, Connecticut, in 2012, has been extensively studied as an example of a mass shooter with ASD symptoms (Eagan et al., 2014). He is described as presenting 'marked social impairment and extreme anxiety' (Allely et al., 2017), as well as impaired empathy and difficult relationships with peers and family members (Faccini, 2016; Rice & Hoffman, 2015). This is hypothesised to have led to his social isolation and deterioration in his mental health (Eagan et al., 2014). Similarly, Nikolas Cruz, who targeted the Stoneman Douglas High School in Parkland, Florida, in 2018, was also characterised by difficult and aggressive social interactions with peers, teachers, and family members (Anaele, 2020). He was described as a loner – and subsequently retreated into target shooting as a hobby prior to his attack (Anaele, 2020). A similar 'downward spiral' is discussed in relation to Dylann Roof, a mass shooter who targeted an Emanuel African Methodist Episcopal Church in Charleston, South Carolina in 2015 (Allely & Faccini, 2019).

Al-Attar (2020) hypothesises that individuals with ASD who struggle with in-person socialisation may retreat to online means of communication, where there may be fewer communication challenges and more opportunities to find a sense of belonging and purpose. Similarly, those with ADHD may also experience social rejection and seek belonging in online communities (Al-Attar & Worthington, 2025). Thus, it can be characterised as a coping strategy – however, it may also lead to further isolation. This is also shown in Lanza's case: 'Lanza felt most comfortable by himself and only preferred interacting with people online, hence his time playing video games' (Anaele, 2020, p. 54), and his only friends were those he interacted with through video games. Similarly, it is theorised that Roof's social anxiety and subsequent isolation led him to spend the majority of his time on the internet, where he researched various topics related to race (Allely & Faccini, 2019). The evidence from these case studies provides some indication

as to how social and relationship difficulties can lead to isolation, resentment, and turning to less social activities, such as the online and gaming world or lone hobbies. However, these supporting case studies, while offering deeper insights and examples, rely on a very limited number of cases derived from secondary data, meaning that they may not be generalisable or representative beyond the individuals studied. Furthermore, such analyses based on open-source data may not fully capture the clinical and forensic insights into drivers of the individuals' behaviour.

The impact of social and communication difficulties is also demonstrated in the context of 'inceldom', which in recent years has been more extensively studied, including through larger empirical studies (Stijelja & Mishara, 2023). As aforementioned, incel harm is increasingly being characterised as a form of extremism (Hoffman et al., 2020; but see also Shawcross, 2023). Offenders in this group are characterised by difficulties in forming romantic and sexual relationships and subsequent frustration, blaming women for their lack of romantic success which in some cases results in violence (Broyd et al., 2022). In this context, social difficulties in ASD may contextualise the relationship difficulties experienced by incels (Broyd et al., 2022; Van Brunt & Taylor, 2020). Indeed, Broyd et al.'s (2022) narrative review of existing research in this area describes a subgroup of individuals who self-attribute their incel status to mental illness and neurodevelopmental disorders, particularly ASD, and note that incels self-report a high prevalence of ASD symptoms.

Broyd et al. (2022) and Van Brunt and Taylor (2020) discuss the example of the mass shooter Elliot Rodger, who details his lack of success in attracting women in his manifesto, and a feeling of entitlement to such attraction. It is argued that his ASD contributed to his frustration which precipitated his attack (but see also Allely & Faccini, 2017a, who note that there is insufficient evidence to indicate a diagnosis of ASD). Beyond this individual case study, two studies (Speckhard & Ellenberg, 2022; Speckhard et al., 2021) describe survey results from 272 self-identified incels, in which respondents with ASD attributed their lack of romantic success to their symptoms, including social awkwardness and difficulties in relating to others. These studies also found that although not associated with a specific diagnosis, incel forum users reported that participating in forums overall made them feel less lonely, a greater sense of belonging, and more understood. Meanwhile, the 'self-reported intensity of autism spectrum traits was significantly associated with agreement that the forum has made the respondent feel violent and misogynistic' (Speckhard & Ellenberg, 2022, p. 15). Consequently, Speckhard and Ellenberg (2022) describe ASD as 'antecedent' to inceldom. Similarly, a study examining the content of 20 online incel message boards found that self-identified autistic incels demonstrated and perpetuated internalised ableism, where some considered autism to be a 'death sentence' linked to social exclusion and romantic failure, using such grievances to justify misogyny,

and in some cases, violence against women (Gheorghe & Yuzva Clement, 2024). However, Broyd et al. (2022) emphasise that not all men with ASD are at risk of engaging in 'inceldom'; rather this could be characteristic of a particular subgroup with certain circumstances, and is not limited to those with ASD.

Indeed, based on a larger survey sample of self-reported incels, Costello et al. (2025) propose a 'dual pathways hypothesis of incel harm', whereby those with ASD, 'low mate value' ('men who doubt their appeal to women') and adverse childhood experiences may follow a distinct 'psychological vulnerability' pathway, compared with those who exhibit dispositional traits based on dark triad traits and right-wing political orientation. This dual pathways hypothesis suggests that while not all those with ASD are vulnerable to incel or extremist engagement, the way in which those with ASD engage with extremism and inceldom may be distinct from their neurotypical counterparts.

Although less common, some papers also mention the role of social naïveté, particularly with difficulties in discerning the malicious intentions of others. For example, Faccini and Allely (2017b) describe a case in which an individual was arrested after sending bomb-making instructions to an individual who he believed to be affiliated with ISIS. They argue that due to his lack of independent living skills, it is unlikely he would have posed a threat of action, but rather, was 'exploited and/or becoming sympathetic and inspired by ISIS' (Faccini & Allely, 2017b, p. 74).

However, despite these potential pathways, it is important to note that there is no direct common link between social and communication difficulties and offending behaviour. Indeed, some articles argue that Lanza's isolation was exaggerated in reports (Bronner, 2014). Similarly, Bhui (2018) states that in some research, lone actors with ASD and psychoses 'were not that isolated and were not showing signs of being secretive or avoiding detection' (S18). Conversely, White et al. (2017) highlight that there may be a distinction between 'hypervigilance for fear of being detected, or extreme isolation' (p. 155). This indicates that not all terrorists or mass shooters with ASD follow the same pathway, and that symptoms should not be treated as 'risk factors' in isolation.

Theme 3: hyperfixation, obsessionality, and circumscribed interests

A key theme in the literature on ASD and violent extremism is the role of hyperfixation, obsessionality, and circumscribed or restricted interests. Again, this is not unexpected as it relates to one of the two primary diagnostic criteria for ASD (World Health Organisation, 2019a). Al-Attar (2020) highlights that 'intense, narrow, all-absorbing interests' may include topics such as terrorism, mass shootings, explosives, and hacking. These interests 'may take on an obsessional quality … [which] may

indeed push the individual from transient thinking about/interest in terrorism to a fixated pre-occupation with and behavioural acting out of terrorism interest' (Al-Attar, 2020, p. 12). Ideologically based obsessional interests may become a risk in this context, as noted by Palermo (2013): 'obsessive ideological passions may be causal in the development of radical and fanatical ideology ... in a subject whose cognitive vulnerability tends toward rigidity and obsessionality, this may indeed represent a risk factor for extremism' (p. 349). Such obsessions and interests were also associated with collecting behaviour (e.g. of information, documents, as well as physical items), which, as described by Dinesson (2022) in the UK legislative context, could constitute offences in themselves where such information is considered useful to committing or preparing acts of terrorism.

Three recurring obsessions or interests found in the literature were obsessions with mass murder, weapons (including bombs), and extremist narratives or ideologies. For example, Adam Lanza showed a deep obsession with mass murders, collecting information and compiling a detailed document about previous attacks (Anaele, 2020; Eagan et al., 2014; Faccini, 2016; White et al., 2017). Obsessions with weapons were highlighted by a number of papers, which took the form of firearms, guns, knives, or bombs (Allely, 2020; Erlandsson & Meloy, 2018; Faccini, 2010, 2016; Patil et al., 2024; Silva et al., 2003). Other cases highlight restricted and obsessive interests relating to extremist ideologies. For example, Dylann Roof had a 'preoccupation with racism [which] consumed all aspects of his life' (Allely & Faccini, 2019, p. 7). This included extensively reading racist material online and visiting confederate museums (Allely & Faccini, 2019). Similarly, in a case study of a male who was convicted of anti-Muslim hate crimes and incitement to violence, Little et al. (2021) describe the individual's 'repetitive and obsessive computer-based anti-Muslim research' (p. 118). As noted previously, social isolation can lead to more time spent alone online, which, as in these case studies, may provide an enabling environment to fixate more on restricted interests and preoccupations.

A noticeable trend, particularly for mass murderers based in the US, is that attackers with a circumscribed interest in weapons had easy access to firearms in the home. For example, both Adam Lanza and Nicolas Cruz had guns at home, and their parents took them to shooting ranges (Anaele, 2020). One notable exception was the case of a school attacker in Sweden, who targeted staff and students of immigrant backgrounds. This attacker had an obsession with both firearms and swords, and slept underneath a samurai sword which he subsequently used for his attack (Erlandsson & Meloy, 2018). These cases could suggest that access to weapons may be a relevant factor to consider where such fixations and interests are present.

However, although many papers discussed the potential role of hyperfixation, obsessionality, and circumscribed interests, some also noted the challenges in distinguishing between ASD-related interests from genuine threats and ideological commitment (Patil et al., 2024). This is echoed in the literature examining 'extreme overvalued beliefs and identities', whereby it is noted that there may be some overlap between ASD-linked interests and obsessions, and pathological fixations linked to extreme overvalued beliefs (Kristinsdottir et al., 2025). However, the authors also note that such beliefs may not be violent in the absence of 'identity fusion' and that these overlaps remain under-researched in the context of ASD.

Theme 4: cognitive styles

Related to some themes of obsessionality and restricted interests, ASD may also be characterised by rigid cognitive styles, including systematising, 'whereby they process and organise the world and information as systems, facts and categories' (Al-Attar, 2020, p. 17). Similarly, 'ASD may heighten an individual's need for predictability, consistency/routine, order, and rigid adherence to rules' (Al-Attar, 2020, p. 9). The lack of these, or changes to them, may subsequently cause frustration, distress, and anxiety (Al-Attar, 2020; Del Pozzo et al., 2018). This is noted in Lanza's case, in which he experienced difficulties with changes to his mother's routine, which fuelled anger towards mother who he ultimately murdered at the start of his attack (Anaele, 2020).

Under conditions of stress and anxiety (perhaps due to disruptions to routines), this need for predictability may also make individuals 'susceptible to theories/ideologies/causes that purport to restore the natural (moral, cultural, social or environmental) order and make the world more certain and predictable' (Al-Attar, 2020, pp. 9–10). For example, Broyd et al. (2022) suggest that there may be a functional link between cognitive styles characterised by literal thinking and interpretations, and radicalisation to inceldom: 'difficulties associated with autism may increase vulnerability to being drawn into the "rule-based" incel ideology and increase risk of radicalisation' (p. 4). Similarly, in a case study of a 17-year-old patient with ASD who made threats of extreme violence, Patil et al. (2024) highlight the role of concrete and rule-based thinking to restore order, including 'wanting to "punish" lawmakers for targeting LGBTQIA+' (p. 3).

Cognitive styles associated with ASD may also include weak central coherence – a 'tendency to overfocus on fine detail … alongside a tendency to overlook the bigger picture' (Al-Attar, 2020, p. 17). For example, Faccini (2010) describes a case in which an individual repeatedly made fire, bomb and assassination threats, in which the individual did not appear to understand

the bigger picture or consequences of his actions as these incidents did not result in injury.

Executive function difficulties associated with neurodivergence, including ADHD and ASD, are also discussed in the literature. For example, Moczynski et al. (2022) note that 'impulsivity, poor self-monitoring, and difficulty delaying gratification' (p. 90), as well as attention difficulties, may be associated with difficulties in employment, social rejection (including from terrorist groups), reactivity to provocation, and impulsive violence. Several documents mention these direct and indirect effects of impulsivity, in some cases with specific reference to ADHD. For example, Meloy and Pollard (2017) note that impulsive terrorist violence can occur in response to a 'triggering event', particularly a loss or experience of humiliation, and recommend that impulsivity should be assessed in persons of concern.

Theme 5: Sensory issues

Individuals with ASD and ADHD may struggle with sensory issues (World Health Organisation, 2019a, 2019b). These may be characterised as hypersensitivities – finding 'sensory stimuli in one or more sensory modalities overwhelming and aversive' – which may make some environments challenging (Al-Attar, 2020, p. 19). Alternatively, the individual may experience hyposensitivities, where 'the individual may have a heightened need for and seek out sensory stimulation in one or more sensory modalities' (Al-Attar, 2020, p. 19).

Sensory sensitivity is mentioned in several documents found in this search, particularly those describing Adam Lanza. In these documents, the relevance of sensory sensitivity to his behaviour and risk is rarely clarified, however, some suggest an indirect link, whereby Lanza experienced difficulties in attending school due to the sensory overload he experienced, which in turn led to him staying at home and may have contributed to his isolation (Allely et al., 2017; Anaele, 2020; Eagan et al., 2014; Fitzgerald, 2015; Rice & Hoffman, 2015). Meanwhile, Faccini (2016) highlights that this sensory overload may contribute to 'a sense of a threatening world' (p. 11) which may contribute to grievances on the pathway to violence.

A more direct role of sensory sensitivity is highlighted in a case study examining the Unabomber, Theodore Kaczynski (Silva et al., 2003). In this formulation, the authors draw a direct link between Kaczynski's experiences of sensory overload and frustration from the noises made by machinery, vehicles, and aircraft, and subsequently targeting related individuals and businesses (e.g. airlines).

The literature relating to sensory hyposensitivity in this context is sparser. For some individuals, it is suggested that apparent fixations on video games may fulfil sensory stimulation needs and alleviate boredom (Allely & Faccini, 2017b). However, in attack behaviours, sensory hyposensitivity and

stimulation may be conceptualised through sensation- or thrill-seeking behaviours. In the case study of an individual with ASD who made repeated fire and bomb threats, Faccini (2010) notes the individual's lifelong interest with fire, describing fire setting 'to see some fun' (p. 59). White et al. (2017) describe a similar excitement in an adolescent who had planned a school attack, who stated that he would have found it 'exciting and enjoyable' (p. 156). However, White et al. (2017) argue that this sensation-seeking behaviour is not frequently observed in ASD and is more representative of other disorders. This may be more characteristic of ADHD. For example, McLaughlin et al. (2017) argue that sensation-seeking behaviour in mass shooters may be characteristic of 'Reward Deficiency Syndrome' characterised by neurogenetic differences in dopamine receptors – which may be closely linked to ADHD (Blum et al., 2008). McLaughlin et al. (2017) describe such individuals as seeking sensory rewards, such as through shooting guns, and engaging in addictive behaviours, such as gambling and hypersexuality. Similarly, Al-Attar and Worthington (2025) suggest that among those with ADHD, pull factors for online extremism can include the stimulation, novelty, and rewarding nature of extremist content, such as graphic imagery and taboo topics.

Theme 6: vivid fantasies and ideation

One way in which individuals may seek sensory stimulation is through vivid fantasies and ideation (Krasenberg & Wouterse, 2019). Al-Attar (2020) notes that interests and pre-occupations may be characterised through vivid imagery and fantasy, for example imagery of terror attacks.

The role of fantasy and ideation, and the transition from fantasy to action, is demonstrated in some of the cases highlighted in this review. For example, in Faccini's (2010) aforementioned bomb-threatening case study, the individual's 'excitement' is closely related to fantasies about the impact of bomb and fire threats, such as a large emergency response. Other case studies highlight how vivid and detailed visual and written fantasies describe attackers' violent ideation and obsessions with death, killing, and the macabre – for example through drawing coffins, violent scenes, or writing gruesome stories (Anaele, 2020; Leary et al., 2003; Rice & Hoffman, 2015). Some papers also highlight an overlap with sexually deviant fantasies (Allely et al., 2014; McLaughlin et al., 2017).

Vivid fantasies and ideations can also relate to idealised versions of the individual. For example, case study analyses describe Anders Breivik's elaborate visual representations of himself, such as through role playing and including photographs of himself in colourful uniforms in his manifesto (Allely & Faccini, 2017a; Faccini & Allely, 2016). These vivid ideations and fantasies highlight the grandiose narrative he created around himself and

the attack he perpetrated, where he positioned himself as a 'hero' (Faccini & Allely, 2016, p. 233).

Some papers suggest that these kinds of fantasies and ideations may be a maladaptive response as a result of long periods of isolation (Murphy, 2022; Silva et al., 2003), which can leave the individuals susceptible to constructing a vivid mental life 'unchecked by norms of the social environment' (Silva et al., 2003, p. 33). However, some papers also suggest that ideation may relate to paranoid or psychotic ideation relating to comorbid disorders (Inderberg et al., 2019; Krasenberg & Wouterse, 2019; Wachtel & Shorter, 2013; White et al., 2017).

Theme 7: emotional dysregulation

Although not a core diagnostic feature of ASD or ADHD in itself, emotional dysregulation is a commonly observed associated or secondary feature (Walter et al., 2020; World Health Organisation, 2019a, 2019b). As noted previously, emotional dysregulation can be a response to external stressors such as changes to routines, sensory overwhelm, and social rejection, which can trigger feelings of frustration, a lack of control, and anxiety (Al-Attar, 2020; Allely & Faccini, 2017b, 2019; Del Pozzo et al., 2018; Faccini, 2016; Faccini & Allely, 2016; Silva et al., 2003).

In addition to external stressors, several papers note that other more internalised emotional difficulties were also present, such as low mood, aggression, and issues with self-esteem or confidence. Some papers specifically highlight low mood and self-esteem associated with body image (Allely, 2020; Allely & Faccini, 2019; Erlandsson & Meloy, 2018; Faccini, 2016; Krasenberg & Wouterse, 2019), while one paper highlights emotional difficulties associated with gender identity and sexual orientation (Erlandsson & Meloy, 2018). Such low mood and a lack of self-confidence may both be the cause and effect of factors such as social isolation. However, in many cases of the violent extremists and mass murderers studied, the emotional difficulties experienced were attributable to comorbid disorders such as depression and anxiety. These are examined in more detail in the next section.

Theme 8: complex needs, comorbidities, and trauma

A recurring theme found in the literature is that neurodivergence alone may not fully account for extremist or offending behaviour; there are usually additional factors that may interact with or exacerbate difficulties associated with neurodivergent symptoms. As well as the environmental factors and stressors outlined previously, several other external aspects can create complex and interacting needs. These include comorbidities, trauma, and other

life stressors such as familial, relationship, and employment difficulties. Similarly, this was a key finding in previous systematic reviews examining mental health problems and radicalisation (e.g. Gill et al., 2021). While a variety of different stressors exist, here the focus is specifically on those that, according to the literature, may interact with neurodivergent symptomology and extremism vulnerability.

Comorbidities

The majority of papers included in this review discuss the relevance of comorbidities. ASD has a high rate of comorbidity with a variety of other disorders (Del Pozzo et al., 2018). The most commonly mentioned comorbidities found in this review were depression, anxiety, psychosis, schizophrenia, narcissistic personality disorder, OCD, and psychopathy.

The role of comorbid psychosis or schizophrenia has received particular interest in its functional relevance. Wachtel and Shorter (2013) characterise this as a 'one-two punch risk for tragic violence', arguing that ASD is not an inherently violent disorder and that the violent ideation seen in such cases is more closely linked to psychosis than ASD. Thus, they argue that ASD presents an elevated risk for psychopathology in general, including psychosis, and that when this combination occurs, individuals are at greater risk of violence, including mass violence. Similarly, Del Pozzo et al. (2018) hypothesise that undiagnosed psychosis is responsible for most violent acts by people with ASD, which they link to mass violence. Other papers highlight the neurological and symptomatic overlap of psychosis, schizophrenia, and ASD, and how the combination may increase vulnerability (Allely, 2020; Faccini & Allely, 2016; Silva et al., 2003).

Although commonly mentioned, less attention is given to the functional role of other disorders such as depression and anxiety, beyond formulations around their contributory roles in social isolation. However, Al-Attar (2020) highlights that stress, depression, and anxiety may heighten individuals' focus upon terrorism-related restricted interests, which may serve a self-soothing function. This is exemplified in Little et al.'s (2021) case study, which described the interaction between obsessionality, repetitive behaviours, social isolation, and anxiety in an individual who apparently 'self-radicalised' online. This individual's 'solitary online activity produced an immediate but temporary reduction of his chronic anxiety … In turn, this increased the exposure to far-right ideologies and strengthened the formation of a radical narrative' (Little et al., 2021, p. 116). Similarly, the literature on incel harms suggests that hopelessness and depression are more important than ASD alone for incel harm (Broyd et al., 2022; Speckhard & Ellenberg, 2022; Speckhard et al., 2021; & Taylor, 2020).

Trauma and life stressors

Several papers also note the importance of trauma and other life stressors. For example, Allely et al. (2014) highlight that psychosocial stressors (such as sexual abuse or severe bullying) were present in more than half their sample of serial killers and mass murderers. Head injuries were also present in this population (Allely et al., 2014). Similarly, Del Pozzo et al. (2018) argue that various adversity factors, particularly family environment, abuse, and victimisation may contribute to violence. This is echoed in a study that interviewed clinicians working with patients referred to a clinical violent extremism intervention team, who mention the role of relational trauma in contributing towards grievances – but also the risk of further trauma through engagement in the criminal justice system (Rousseau, Johnson-Lafleur, et al., 2023). Additionally, Moczynski et al. (2022) discuss the interplay between executive function deficits seen in neurodivergent conditions, and life stressors, particularly difficulties in employment, 'thereby contributing to an overall thwarting of occupational goals' (p. 90), which may be considered a distal risk factor. In conceptualising the relationship between comorbidities, trauma, and stressors, Faccini (2016) proposes a combination of models to describe how these different factors can coalesce to form a grievance, the first step in the Path to Intended Violence model (p. 8).

Theme 9: enhancing resilience and considerations for practice

In addition to contextualising vulnerability and risk of violent extremist engagement, neurodivergence may also bear implications for resilience and protection. Increasingly, there has been recognition in the wider terrorism literature that more research is needed to understand protective and resilience factors – that is, behaviours, attitudes and characteristics that may make an individual less likely to engage in terrorist violence (Lösel et al., 2018) – and how these can be leveraged to reduce risk (Clemmow et al., 2020). However, so far, the research is sparse – and even more so in the context of neurodivergence. Nevertheless, there are suggestions in the literature that provide opportunities for future directions for research. Broadly, in the context of neurodivergence, these encompass factors associated with neurodivergence that may reduce vulnerability and risk in some contexts, ways in which symptoms can be addressed or alleviated to reduce vulnerability, and ways in which additional comorbidities and life stressors can be addressed to reduce vulnerability.

Protective factors associated with neurodivergent symptoms

Some papers highlight that the rigid thinking and rule-based cognitive styles seen in ASD may make individuals less likely to offend (Wachtel & Shorter, 2013). For example, in a paper describing patients referred to a clinical violent

extremism intervention programme in Quebec, Rousseau, Frounfelker, et al. (2023) state that among clients with ASD, 'their level of compliance with services tends to be better than the compliance of clients with other diagnoses' (p. 229). As well as the influence of rule-based cognitive styles, the authors suggest that this may also be because high levels of distress 'may lead them to accept services more readily than others.' This compliance with clinical interventions is also highlighted in another study that interviewed clinicians, who note that those with ASD possess a 'strong sense of morality and comply rigidly with instructions' as a potential protective factor (Rousseau, Johnson-Lafleur, et al., 2023, p. 7).

Meanwhile, Corner and Gill (2014) highlight that individuals with ASD were less likely to have risky spouses to draw them into extremism. This could be an indicator of both a vulnerability and protective factor. Corner et al. (2016) suggest that they may be less likely to have a spouse in general due to social and relationship difficulties associated with ASD, which could create vulnerability to social isolation and feelings of social rejection, but conversely, they may be less prone to in-person social elements of radicalisation. This duality is shown in a case described by Palermo (2013), in which they describe social isolation as a potential risk factor, but also note that 'extreme social isolation . . . and "diversity" in the context of socialisation preclude, at least in part, the development of possibly key components in the engagement of actualised extremist behaviour, such as socialisation and interaction and may, paradoxically, be protective' (p. 349). Indeed, Corner et al. (2016) found that although ASD was overrepresented in their lone-actor sample compared with the general population, it was underrepresented in group actor samples. This suggests that some ASD symptoms may offer protection against engagement in some types of extremism.

Treatment and interventions based on neurodivergent symptomology

Just one study specifically focused on interventions from the perspective of those receiving them: Ngov et al. (2025) examined the experiences of seven autistic clients receiving clinical interventions for violent extremism risk through interviews and surveys. This study found that clients had mixed experiences, with some developing grievances towards clinicians, while others noted that receiving a diagnosis of ASD and specialist support from clinicians with expertise in ASD meant that interventions were better adapted to their needs.

White et al. (2017) emphasise the importance of individualised case management planning, highlighting that appropriate interventions will depend on the individual's behaviour. If they have already progressed to attack planning, this will require more immediate interventions such as detention (incarceration or hospitalisation). However, White et al. (2017) also emphasise that such detention may make an individual with ASD more vulnerable due to

the change and potential sensory issues, thus they suggest that where possible, community-based interventions may be preferable and more appropriate if the individual has not progressed to the point of attack preparation.

Throughout various stages of violent extremism pathways, Al-Attar (2020) and White et al. (2017) highlight several interventions and opportunities to enhance resilience based on the ASD-related vulnerabilities identified, reducing push and pull factors to violent extremism, and replacing pull factors with prosocial alternatives. In some cases, these are drawn from interventions that have been applied to ASD offenders in other fields (e.g. sexual offending). Similarly, Broyd et al. (2022) note that vulnerabilities could be 'nurtured as strengths' to increase resilience, particularly through identifying stabilising influences.

The literature highlights that fantasies and restricted interests can be normal, common, and may not necessarily be harmful if not risk-related, thus it is important to understand their relevance to risk (Al-Attar, 2020; Faccini & Allely, 2017b; Weisbrot, 2008). Where restricted interests, obsessionality, and fantasies are terrorism and risk-related, Al-Attar (2020) suggests diversion to existent healthy interests that 'offer comparable levels of reward/relief' (p. 5), a harm-reduction approach for safer terrorism-related interests, or closely monitoring and regulating time spent on terrorism-related interests. Similarly, Wachtel and Shorter (2013) suggest encouraging alternative leisure activities, while White et al. (2017) suggest monitoring and supervising fixated interests, and interrupting problematic behaviours before they can lead to negative consequences. This can include placing restrictions on the problem behaviour such as no-contact orders and supervised internet use (Higham et al., 2021; Wachtel & Shorter, 2013; White et al., 2017). Al-Attar (2020) also suggests challenging or 'critiquing the authenticity and agenda' (p. 9) of extremist imagery and narratives that feed risk-related fantasies, in order to reduce their pull. This echoes similar critical thinking and cognitive reappraisal strategies highlighted elsewhere in the literature (e.g. White et al., 2017). Fox et al. (2016) highlight that mass murderers with ASD show a high degree of cognitive ability to be able to carry out pre-meditated attacks, which shows that there is capacity for critical thinking and change to divert at-risk individuals away from radicalisation, which would be leveraged by this strategy.

Some suggested intervention strategies focus on reducing the influence of external stressors (White et al., 2017). For example, Al-Attar (2020) suggests support at times of transition to help to restore routine, structure, and predictability, as well as environmental adjustments (e.g. in education or employment) to reduce sensory overwhelm. Broyd et al. (2022) highlight the importance of identifying and leveraging 'stabilising influences', such as social and family support, and stability in work, education, and housing. Doing so may encourage non-violence, as well as positive relationships.

Similarly, in line with recommendations around social support, some documents suggest strategies focusing on social and communication skills to reduce the difficulties experienced by those with ASD (Al-Attar, 2020; Allely & Faccini, 2017b; Erlandsson & Meloy, 2018; Sturmey, 2019; White et al., 2017).

Finally, the literature discusses therapies to address difficulties around anxiety, emotional difficulties, and low self-esteem, such as CBT and stress and anger management (Al-Attar, 2020; Broyd et al., 2022; Faccini, 2010, 2016; Sturmey, 2019; White et al., 2017). In particular, Faccini (2010, 2016) specifically suggests reconstructive therapy based on Eriksonian theory, focusing on the individual's sense of self-worth, autonomy, pride, and identity. Enhancing these aspects may reduce the individual's feelings of personal grievance that may relate to risk. Conversely, therapeutic approaches that are perceived as judgmental or are not appropriately tailored to neurodivergence, may instead exacerbate grievances (Speckhard & Ellenberg, 2022). In addition, where such emotional difficulties meet a diagnostic threshold for a comorbid disorder, other more specific treatments may be more appropriate.

Management of comorbid disorders and complex needs

The literature reviewed highlights that an important vulnerability factor for neurodivergent individuals in the extremism context could be the presence of undiagnosed and untreated secondary conditions, particularly schizophrenia and psychosis. Documents in this review highlight the importance of early intervention and treatment, particularly for cases with comorbidities (Del Pozzo et al., 2018; Wachtel & Shorter, 2013; White et al., 2017). These studies advocate for the monitoring for psychotic symptom development in people with ASD to enable early detection and treatment, on the basis that psychosis combined with ASD may present a greater risk for violent behaviour (Del Pozzo et al., 2018; Wachtel & Shorter, 2013). Wachtel and Shorter (2013) also suggest the use of psychotropics and 'quality mental health services' to manage psychosis.

The literature also highlights that attackers, particularly those with complex needs, were either untreated or had their needs poorly managed which may have contributed to their violent behaviour (Allely, 2020; Sturmey, 2019). For example, Sturmey (2019) posits that Adam Lanza's attack may have been prevented through early detection and support for his ASD and comorbidities (OCD, anxiety, and depression). For example, alongside ASD-specific interventions, they suggest exposure and response prevention for OCD, appropriate anti-depressants, and teaching relaxation techniques.

Risk and threat assessment

The characteristics and factors identified in this review may provide some considerations for the threat/risk assessment and management of

neurodivergent individuals within the violent extremism context (Al-Attar, 2018b, 2019a, 2020; White et al., 2017). The literature suggests that some of these considerations can be integrated alongside existing risk and threat assessment processes. Nevertheless, it is important to note that such suggestions drawn from the literature are based on a limited number of case studies, and should therefore be interpreted with caution.

In the absence of published formal guidance, some papers recommend that threat and risk assessment processes should broadly follow the structured professional judgment (SPJ) approach with multidisciplinary threat assessment teams, in line with practice for assessing neurotypical cases. For example, Erlandsson and Meloy (2018) apply the TRAP-18 SPJ threat assessment instrument to a case study of an 'ideologically motivated' school shooter with ASD, finding that it captured many of the behaviours presented in the case. Indeed, some of the TRAP-18's indicators closely relate to some features of ASD discussed here, such as 'fixation' which closely relates to obsessional interests, and indicators relating to social isolation, difficulties in forming relationships, and 'dependence on the virtual community'. The similar 'Path to Intended Violence' model is discussed in several papers as a threat assessment model that can be applied to individuals with ASD who may be at risk of engaging in mass and terrorist violence (Allely, 2020; Allely & Faccini, 2017b, 2019; Faccini, 2016; Faccini & Allely, 2016). Broyd et al. (2022) suggest a specific SPJ instrument for incel violence, focusing on risk factors indicating that intense fixations and warning behaviours may be progressing towards a pathway to violence. They suggest that the contextual role of ASD will differ between cases, thus its relevance should be established through individual case formulation, in line with general SPJ risk assessment approaches (Logan & Lloyd, 2018). Beyond SPJ approaches, Faccini and Allely (2017b) also highlight the potential usefulness of linguistic threat assessment, particularly for social media and internet forum posts, and the importance of co-operation and information sharing between agencies to facilitate this.

White et al. (2017) propose suggested guidelines for case formulation and threat/risk assessment for targeted violence in individuals with ASD, which can be integrated alongside these threat and risk assessment models. These guidelines include consideration of the individual's developmental history, social communication deficits, naïveté contributing to risk, problematic intense interests, poor tolerance for frustration, stressors and provocative contexts, comorbidities (axis I psychiatric disorders and psychopathy), and pathway to violence planning. Allely and Faccini (2019) additionally suggest ASD-specific risk factors for mass violence: difficulty adjusting to having ASD, feelings of inadequacy, a downward spiral, and not cooperating with treatment to address difficulties and comorbidities. Meloy and Pollard (2017) further advocate for the direct or indirect assessment of impulsivity alongside other warning behaviours for targeted violence, whilst Moczynski et al. (2022)

highlight the potential usefulness of a range of psychometric assessment instruments, including measures of executive function and social cognition deficits, to understand how the individual interacts with the world, and their potential vulnerabilities.

However, White et al. (2017) highlight the complexity of assessing risk on the basis of both ASD-specific and non-ASD factors, and emphasise that detailed analyses and diagnoses should only be conducted by knowledgeable mental health clinicians – indeed, this is relevant for all forms of neurodivergence. They emphasise that different behaviours can be formulated in different ways, for example, whether obsessionality with violence is characteristic of restricted interests found in ASD, or psychopathic traits. This highlights the importance of a detailed analysis and formulation. Similarly, White et al. (2017) highlight the problem of 'diagnostic overshadowing' where symptoms of a disorder may incorrectly be attributed to a comorbid developmental disorder (e.g. ASD). In a similar vein, Woodbury-Smith et al. (2022) highlight that focusing on diagnostic labels rather than true risk factors may produce 'red herrings' – i.e. an emphasis on characteristics that are not necessarily relevant to the risk at hand. Bronner (2014) highlight similar conceptual problems and criticisms. These problems and criticisms highlight the delicate balance that must be struck when considering the applicability of the published literature to clinical and forensic contexts.

Discussion

This systematic review identified 93 papers relating to neurodivergence (particularly ASD) in the context of violent extremism and mass murder. The literature found through this search adopts a variety of methods, and highlights several potential ASD-linked, and some ADHD-linked, factors in the context of violent extremism, as well as suggestions for treatment and interventions. Importantly, the factors and links identified within the literature are specifically discussed within the context of extremist and offender populations, rather than neurodivergent populations as a whole.

Through this review, nine key themes emerged. First, this review identified research that examined the prevalence of neurodivergence amongst extremist and mass murderer samples, finding that prevalence varies greatly between samples and contexts. Second, the identified literature highlighted the challenges and potential role of social and relationship difficulties amongst neurodivergent individuals with extremism concerns, particularly in shaping grievances within incel contexts. Third, the literature discussed how harmful fixations and circumscribed interests – particularly those related to mass murder, weapons, and extremist ideologies – may influence offending pathways. Fourth, the literature suggests that rigid, rule-based, and literal thinking styles associated with neurodivergence may shape the appeal of

ideologies and the response to perceived threats or injustices. Fifth, sensory sensitivities may contribute to isolation, while stimulation-seeking behaviours (particularly with reference to ADHD) may act as a pull factor for extremist engagement. Sixth, evidence from the literature suggests that vivid internal fantasies, including violent or grandiose ideation, may serve as coping mechanisms for isolation and distress, but can in some cases escalate into action. Seventh, the literature highlights that emotional dysregulation, including anxiety, low mood, and poor self-esteem, may exacerbate vulnerability to extremist narratives. Eighth, the literature emphasises that amongst those with extremist and mass violence concerns, neurodivergence often coexists with other mental health needs and life stressors, which together may compound vulnerability. Collectively, these traits and experiences, especially when combined, may shape individual pathways to risk or resilience in neurodivergent individuals within the extremism context. The final theme focused on enhancing resilience and considerations for practice, where the literature highlighted that neurodivergent traits can also be protective, as well as the importance of tailored interventions to mitigate risk and promote resilience.

Limitations

The literature found is not without its limitations, particularly relating to the scarcity of research in the extremism context, limitations around data access and availability, and subsequently limitations in the quality of the research. The existing literature is fragmented, originating from a variety of different fields and sources. While this means that there is some availability of different perspectives and knowledge from different fields, this can lead to difficulty in comparing papers, assessing quality, and synthesising findings. Similarly, Woodbury-Smith et al. (2022) highlight that such knowledge exchanges across fields may be impeded by few collaborative opportunities, and the existence of different agendas.

Several gaps were identified in the information available, particularly a lack of empirical research examining this topic. This is especially the case for research examining interventions, resilience and protective factors, as has been highlighted in the wider violent extremism field (Lösel et al., 2018). In addition, there is an apparent lack of research into ADHD in this context, despite a well-established literature base in the context of criminality and violence in general (Gill et al., 2021). It is unclear if this is because ADHD is less prevalent within violent extremist samples, less likely to be diagnosed, or whether its symptoms are viewed through the lens of personality traits (e.g. impulsivity, thrill seeking) which may not have been captured through this review's search criteria. Similarly, although there is more data relating to ASD, there are still many gaps. The literature is characterised by contradictory/

misdiagnoses, uncertain diagnoses, and undiagnosed individuals. It is also possible that only a skewed sample of individuals have publicly reported diagnoses. This may reflect the underdiagnosis of ASD in the general population (O'Nions et al., 2023), 'diagnostic overshadowing' where comorbidities may either overshadow or be overshadowed by an ASD/ADHD diagnosis (Nylander et al., 2013; Wachtel & Shorter, 2013), and cases where those who experience more severe ASD or comorbidities may be more likely to attract mental health support and diagnoses (Nylander et al., 2013).

Researchers face challenges in the availability and access to primary data, particularly relating to violent extremism (Schuurman, 2020). Most of the documents presented here are therefore based on case studies, usually with a sample size of one, or theoretical/literature reviews. Several studies with larger samples in this review used non-extremist populations (e.g. interviews with practitioners, surveys with general population) or relied on self-reported diagnoses and behaviours, and therefore should be interpreted with caution. Even where some data is available, study authors often have limited access to the individual under consideration, usually conducting research based on limited case study information or open-source data. This will not reflect the breadth and detail of data that would ordinarily be available to clinicians. This means that the data researchers are able to access is limited, and may not fully capture diagnoses or functional links with violent extremism. This also leads researchers to attempt unofficial or posthumous diagnoses based on incomplete data, which makes any inferences potentially questionable (Woodbury-Smith et al., 2022). Furthermore, many researchers may not have the clinical/forensic field experience that may provide further insights and practical recommendations based on these cases. This is also reflected in the lack of distinction between threat and risk assessment considerations in some papers. This means that in many of the papers reviewed, symptoms of ASD/ADHD are only superficially discussed, where the focus is on their presence rather than their functional relevance to the violent extremist behaviour.

Many of the documents discussed here are not directly related to ideologically motivated terrorism and violent extremism (e.g. research focusing on mass murderers). Those that did focus on terrorism and violent extremism were broad, and rarely focused on or related to any specific ideology, aside from the literature on incel harms. Caution should therefore be taken when extrapolating findings beyond their specific contexts. This highlights a more general definitional ambiguity relating to the categorisation of terrorism, violent extremism, and mass murder. Indeed, in one of the papers reviewed, the authors discuss the problematic categorisation of a mass murder targeting people of immigrant backgrounds as a 'hate crime' rather than terrorism (Erlandsson & Meloy, 2018). While the broader keywords and eligibility criteria in this review enabled the inclusion of such papers, this highlights a problem

for the research in this field generally, where inferences may differ depending on the inclusion criteria used. Increasing the pool of studies on which to base inferences may be beneficial, however, should also be interpreted with caution, as findings from one field may not necessarily extrapolate to others. Similarly, this may be an important limitation of papers in this review which extrapolate findings from the general violence literature to explain mass violence (e.g. Del Pozzo et al., 2018).

Nevertheless, maximising the diversity of the pool of studies is particularly important given the limited primary data available, which consequently means that several studies are based on the same cases. For example, multiple papers included in this review conducted case study analyses or theoretical reviews based on the same individuals (e.g. Adam Lanza, Elliot Rodger), suggesting that they are not generating much new content. This may lead to overestimating the relevance of specific factors – for example, quantifying the number of studies highlighting a specific risk factor will lead to an inflated number if they are based on the same limited dataset. Consequently, quantifying studies on the basis of specific symptoms/characteristics, or risk factors was not appropriate for this review, as such summaries would have become meaningless. Given the limited sample of extremism-related data, increasing the pool of available data may increase the reliability and validity of findings presented here. Indeed, the convergence between the themes and factors presented here and those from the general offending literature and frameworks (e.g. Skelhorn et al., 2023) may provide promising evidence for convergent validity.

Another issue related to the scarcity of data is that the majority of reported case studies in the literature relate to mass shooters in the US. This represents a bias in the literature, where some findings, particularly those related to interests in firearms and shooting, may therefore not be generalisable to other countries with stricter gun control. Indeed, firearm access and control, particularly among those with mental illnesses, is a contentious issue in the US, unlike other countries (Metzl & MacLeish, 2015). Similarly, cultural differences across populations may limit generalisability.

Limitations with the present review

As aforementioned, some gaps in the research are related to a lack of accessible data. Similarly, there is likely inaccessible research, such as internal government/agency reports, or unpublished research papers, that were not included in this review. The search and eligibility criteria may have further limited access to potentially relevant documents. For example, as aforementioned, it is possible that some documents focus on specific traits (e.g. impulsivity) without naming a diagnosis. Similarly, it is likely that other papers do mention ASD/ADHD specifically, but were missed if this was not mentioned in the abstract or the document's keywords. Conversely, the broad

categories and areas of interest searched for and found meant that this analysis can provide an overview of the existing research, but does not enable in-depth analysis of targeted topics. Due to the variety of methods used, comparison between documents was also not possible in this review. Future reviews may benefit from using this as a starting point, and honing-in on a specific theme of interest to conduct a more in-depth analysis.

Stigma

Research relating to neurodivergence in the context of violent extremism and mass murder can be a sensitive and contentious topic. For example, some of the studies found in this review highlight that media reporting and narratives linking mass murders to ASD may be contributing towards stigma and discrimination towards these groups (Bronner, 2014; Meeks, 2020). In particular, these and other papers in this review note that overemphasising neurodivergence as an explanatory factor can stray into profiling, at the expense of other behavioural or risk factors. It is therefore important to emphasise that the present review does not make any inferences or suggestions about risk in relation to neurodivergence in the general population. This review also does not suggest that neurodivergence itself is a risk factor, that it directly increases or decreases risk, or that it should be considered in isolation when evaluating risk. Rather, the focus of this review is to examine how neurodivergent features can help to contextualise or mediate risk and vulnerability, as well as opportunities for resilience and intervention among the small subset of neurodivergent individuals who engage in violent extremism.

Future directions

As highlighted through the limitations in the research, this review suggests some recommendations for future research to address the gaps in the literature. Importantly, issues around the availability and quality of data and analysis indicate the importance of conducting research that is informed by practice – particularly clinical knowledge of neurodiversity and forensic expertise on violent extremism risk. This can help to target research to practically relevant questions, as well as improve the accessibility of research for practitioners.

As noted previously, much of the research focuses simply on prevalence or presence – both of overall disorders and specific symptoms. Further research is therefore needed to go beyond the simple presence of symptoms and disorders, and instead provide a more in-depth examination of the relevance of these factors and how they can mediate or contextualise risk, vulnerability, and resilience. Future research and reviews can hone-in on more specific themes, symptoms/traits, and interventions to provide a more in-depth analysis. In particular, resilience and protective factors in neurodivergent

individuals within extremism contexts warrant more attention from future research. Finally, a priority for future research should be to establish 'what works' and evidence-based interventions and treatment for neurodivergent individuals at risk of violent extremist engagement, particularly as these may differ from their neurotypical counterparts.

Conclusion

This systematic review synthesised and evaluated the existing literature relating to neurodivergence, particularly ASD and ADHD, in the context of vulnerability to violent extremism and mass violence. In doing so, this review takes stock of the existing knowledge regarding the functional role of ASD/ADHD in extremism and mass violence contexts; considerations for risk management, professional training, and skill; and the quality and extent of the existing literature. By synthesising what is known from a variety of different fields and publication sources, this review identifies and summarises the existing evidence available to help to inform considerations for practice and future research in the field.

The documents reviewed indicate that overall, a multitude of different factors can contribute to violent extremism and mass violence risk – often involving the combination and crystallisation of different diagnoses, environmental factors, and stressors that uniquely combine in individuals. Importantly, there is little evidence to directly link ASD or ADHD to violent extremism or mass violence in the general population. These findings highlight pertinent considerations for how neurodivergence, particularly ASD, is understood in the context of vulnerability, risk, and resilience to violent extremism and mass violence.

The findings from this research may suggest some considerations for practice. Risk assessment and formulation approaches may benefit from considering how neurodivergent traits and symptoms can contextualise risk, vulnerability, and resilience; and their interaction with external and convergent factors. Considering the push and pull factors to mass violence and violent extremism through the lens of neurodivergence may also be relevant for supporting disengagement. This subsequently raises some considerations for practitioner training and skills in risk assessment and management contexts.

Finally, this review highlights important gaps and limitations in the existing research, namely the scarcity of empirical studies, the overreliance on a limited number of case studies, and conceptual challenges relating to the diagnosis of neurodivergence and extrapolation of data from other fields. Future research would therefore benefit from more empirical studies, and an increased emphasis on the relevance of neurodivergent symptoms and traits beyond their mere presence and prevalence in these contexts.

Author contribution

NS and ZA conceptualised the review, developed the search strategy, and defined inclusion criteria. NS conducted the search, document extraction, screening, analysis, and manuscript draft. ZA second-coded during pilot screening phase and provided expertise, support, and editing during all stages.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research was funded by the Centre for Research and Evidence on Security Threats [ESRC Award: ES/V002775/1], which is funded in part by the UK Home Office and security and intelligence agencies (see the public grant decision here: https://gtr.ukri.org/projects?ref=ES%2FV002775%2F1). The funding arrangements required this paper to be reviewed to ensure that its contents did not violate the Official Secrets Act nor disclose sensitive, classified and/or personal information.

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Data availability statement

The full analysis spreadsheet for included papers is available via the UK Data Service: https://doi.org/10.5255/UKDA-SN-856845.

Registration

A registered protocol for this review is available on https://osf.io/e592t. This protocol is based on the PRISMA-P framework (Moher et al., 2015).

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Appendix. Systematic review table

Document	Design/method	Sample Size	Primary outcome	Relevant Diagnosis/es
Al-Attar (2018b)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Al-Attar (2019a)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Al-Attar (2020)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Al-Attar and Worthington (2025)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	ADHD
Allely (2020)	Case study	1	Mass Violence	Autism
Allely (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation, Murder, Mass Violence, General offending	Autism
Allely and Faccini (2017a)	Case study	3	Mass Violence, Terrorism/ violent extremism/ radicalisation	Autism
Allely and Faccini (2017b)	Case study	1	Mass Violence	Autism
Allely and Faccini (2019)	Case study	1	Mass Violence	Autism
Allely et al. (2024)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Allely et al. (2014)	Systematic Review	239	Mass Violence	Autism, ADHD
Allely and Murphy (2023)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation, Mass Violence, General offending	Autism
Allely et al. (2017)	Descriptive Empirical Study, Systematic review, Case Study	75	Mass Violence	Autism
Anaele (2020)	Case study	5	Mass Violence	Autism, ADHD
Bhui (2018)	Literature review	–	Terrorism/violent extremism/ radicalisation	Autism
Bhui et al. (2020)	Survey	618	Terrorism/violent extremism/ radicalisation	Autism
Bronner (2014)	Theoretical Review	–	Mass Violence	Autism
Broyd et al. (2022)	Theoretical Review	–	Incel Harm	Autism
Campelo et al. (2018)	Descriptive Empirical Study/Evaluation	34	Terrorism/violent extremism/ radicalisation	ADHD
Corner and Gill (2014)	Quantitative Empirical study	238	Terrorism/violent extremism/ radicalisation	Autism
Corner et al. (2016)	Descriptive Empirical Study	238	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Costello et al. (2025)	Descriptive Empirical Study	561	Incel Harm	Autism
Daly and Reed (2022)	Qualitative Empirical Study	10	Incel Harm	Autism
Dell'osso et al. (2024)	Literature Review	–	General offending, Mass Violence	Autism
Del Pozzo et al. (2018)	Literature review	–	General Violence, Mass Violence	Autism

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Document	Design/method	Sample Size	Primary outcome	Relevant Diagnosis/es
Dinesson (2022)	Legislative Review/ Case Study	2	Terrorism/violent extremism/ radicalisation	Autism
Druitt et al. (2023)	Literature Review	–	Terrorism/violent extremism/ radicalisation	Autism
Eagan et al. (2014)	Case Study	1	Mass Violence	Autism
Erlandsson and Meloy (2018)	Case Study	1	Mass Violence, Terrorism/ violent extremism/ radicalisation	Autism
Faccini (2010)	Case Study	1	Terrorism/violent extremism/ radicalisation	Autism
Faccini (2016)	Case Study	1	Mass Violence	Autism
Faccini and Allely (2016)	Case Study	1	Terrorism/violent extremism/ radicalisation, Mass Violence	Autism
Faccini and Allely (2017a)	Case Study	1	Murder, Mass Violence	Autism
Faccini and Allely (2017b)	Case Study	7	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Faccini and Allely (2023)	Case Study	1	Arson and Terrorism/violent extremism/radicalisation	Autism
Fitzgerald (2015)	Case Study	4	Mass Violence	Autism, ADHD
Fox et al. (2016)	Quantitative Empirical Study	126	Murder, Mass Violence	ADHD
Gheorghe and Yuzva Clement (2024)	Qualitative Empirical Study	212	Incel Harm	Autism
Gill et al. (2021)	Systematic Review	25 (research articles)	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Gill and Corner (2017)	Theoretical/literature Review	–	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Gojer et al. (2024)	Case Study	2	Terrorism/violent extremism/ radicalisation	Autism
Granacher et al. (2022)	Theoretical Review, Case Study	5	Terrorism/violent extremism/ radicalisation	Autism
Gray et al. (2025)	Descriptive Empirical Study	52	Terrorism/violent extremism/ radicalisation, Mass Violence	Autism
Hanlon et al. (2010)	Quantitative Empirical Study	77	Murder, Mass Violence	ADHD
Higham et al. (2021)	Descriptive Empirical Study/Evaluation	24	Internet offending, Terrorism/ violent extremism/ radicalisation	Autism
Inderberg et al. (2019)	Case Study, Quantitative Empirical Study	3	Terrorism/violent extremism/ radicalisation	Autism
Johnson (2015)	Theoretical Review	–	Arson and bomb making	ADHD, Autism
Kasinathan and Parsons (2025)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Kenyon et al. (2022)	Quantitative Empirical Study	437	Terrorism/violent extremism/radicalisation	Autism, ADHD
Krasenberg and Wouterse (2019)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism

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Document	Design/method	Sample Size	Primary outcome	Relevant Diagnosis/es
Kristinsdottir et al. (2025)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Leary et al. (2003)	Case Study	15	Mass Violence	ADHD
Lindberg et al. (2012)	Descriptive Empirical Study	77	Mass Violence	Autism, ADHD
Little et al. (2021)	Case Study	1	Terrorism/violent extremism/ radicalisation	Autism
Lloyd (2021)	Theoretical/legal Review	–	Terrorism/violent extremism/ radicalisation	Autism
McLaughlin et al. (2017)	Case Study	2	Mass Violence	ADHD
Meeks (2020)	Theoretical Review	–	Mass Violence	Autism, ADHD
Meloy and Pollard (2017)	Case Study	2	Terrorism/violent extremism/ radicalisation	ADHD
Milburn et al. (2024)	Rapid Evidence Assessment	16 (research articles)	Terrorism/violent extremism/ radicalisation	Autism
Moczynski et al. (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Murphy (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Ngov et al. (2025)	Qualitative Empirical Study	7	Terrorism/violent extremism/ radicalisation	Autism
Palermo (2013)	Case Study	1	Terrorism/violent extremism/ radicalisation	Autism
Patil et al. (2024)	Case Study	1	Terrorism/violent extremism/ radicalisation	Autism
Peter et al. (2019)	Quantitative Empirical Study	44	Mass Violence	ADHD
Rakhshandehroo et al. (2025)	Case Study	14	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Rice and Hoffman (2015)	Case Study	1	Mass Violence	Autism
Rolling and Corduan (2018)	Case Study	25	Terrorism/violent extremism/ radicalisation	ADHD
Rousseau, Frounfelker, et al. (2023)	Quantitative Empirical Study	156	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Rousseau, Johnson-Lafleur, et al. (2023)	Mixed Methods Empirical Study	86, 6	Terrorism/violent extremism/ radicalisation	Autism
Seaward et al. (2025)	Quantitative Empirical Study	404	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Silva et al. (2003)	Case Study	1	Terrorism/violent extremism/ radicalisation	Autism
Soares et al. (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Speckhard and Ellenberg (2022)	Descriptive Empirical Study	272	Incel Harm	Autism
Speckhard et al. (2021)	Descriptive Empirical Study	272	Incel Harm	Autism

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Document	Design/method	Sample Size	Primary outcome	Relevant Diagnosis/es
Stijelja and Mishara (2023)	Systematic Review	59 (research articles)	Incel Harm	Autism
Sturmey (2019)	Theoretical Review, Case Study	1	Mass Violence	Autism
Tirkkonen and Vespermann (2023)	Theoretical Review	–	Incel Harm	Autism
Trimbur et al. (2021)	Systematic Review	25 (research articles)	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Van Brunt and Taylor (2020)	Theoretical Review, Case Study	3	Incel Harm	Autism
Vermeulen et al. (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Wachtel and Shorter (2013)	Case Study	3	Mass Violence	Autism, ADHD
Walter et al. (2020)	Qualitative Empirical Study	34	Terrorism/violent extremism/ radicalisation	Autism
Weenink (2015)	Descriptive Empirical Study	140	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Weisbrot (2008)	Theoretical Review, Case Study	114	Mass Violence	ADHD
Weisbrot et al. (2023)	Quantitative Empirical Study	157	Mass Violence	ADHD, Autism
Welch et al. (2023)	Qualitative Empirical Study	711 (online posts)	Terrorism/violent extremism/ radicalisation	Autism
White (2017)	Case Study	1	Mass Violence	Autism
White et al. (2017)	Case Study	5	Mass Violence	Autism, ADHD
Wijekoon et al. (2024)	Qualitative Empirical Study	12	Terrorism/violent extremism/ radicalisation	Autism, ADHD
Woodbury-Smith et al. (2022)	Theoretical Review	–	Terrorism/violent extremism/ radicalisation	Autism
Worthington et al. (2021)	Rapid Evidence Assessment	26 (research articles)	Terrorism/violent extremism/ radicalisation, Mass violence, Incel Harm	Autism, ADHD
Worthington and Wheeler (2023)	Systematic Review	57 (research articles)	General offending, Terrorism/ violent extremism/ radicalisation	Autism, ADHD