

Prevalence of Victimization in Autistic Individuals: A Systematic Review and Meta-Analysis

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Grace Trundle¹ , Katy A. Jones², Danielle Ropar³, and Vincent Egan¹

Abstract

Autistic individuals are at an increased risk of experiencing victimisation. Previous reviews have focussed specific types of victimisation. Thus, a clearer picture considering the range of victimisation experiences autistic people face is required. This systematic review aims to identify the prevalence of victimisation in autistic individuals considering a variety of victimisation types (e.g., bullying, sexual victimisation, and crime) in both adults and children from clinical and community settings. Through systematic searches of relevant databases, 291 studies met the criteria for review. Of those, 34 studies met the inclusion criteria: a) quantitative studies, b) involving autistic individuals, c) reporting prevalence rates of victimisation. Meta-analysis found a pooled prevalence rate of victimisation of 44% in autistic individuals. Subgroup analysis examined moderating factors as high heterogeneity was present. This found the pooled prevalence rates for bullying to be 47%, 16% for child abuse, 40% for sexual victimisation, 13% for cyberbullying, and 84% for multiple forms of victimisation in autistic individuals, though heterogeneity remained. Correction for participants' age, reporter used, and the population which the sample was recruited from did not reduce heterogeneity. Although heterogeneity impedes the definitive interpretation of the findings, this review illustrates the need for strategies and interventions to reduce the incidence of victimisation.

Keywords

bullying, child abuse, Autism, ASD, Victimization, crime, systematic review, meta-analysis

Introduction

Victimization involves acts in which an individual is subject to cruel or unjust treatment, including bullying (intentional and repeated physical, verbal, and/or relational acts in situations wherein there is a difference in power; Olweus, 1993), maltreatment (including neglect and physical and emotional abuse), sexual victimisation (e.g. rape and sexual assault) and crime (e.g. robbery, theft and assault). There is a high prevalence of victimisation in individuals with Autism Spectrum Disorder (ASD), hereafter referred as autism (Paul et al., 2018; Sreckovic et al., 2014). Autism is a developmental condition characterised by difficulties with social communication and interaction, and restricted, repetitive behaviours or interests (World Health Organisation, 2018). Previously, there were subtypes within autism diagnosis, including Asperger's Syndrome and Pervasive Developmental Disorder, Not Otherwise Specified. In the past decade, autism has been redefined as a single condition characterising a spectrum of functioning, to improve reliability and consistency in autism diagnosis.

Autistic individuals report higher rates of bullying, child abuse, sexual victimisation and crime victimisation than non-autistic individuals (Paul et al., 2018; Weiss & Fardella, 2018).

Traits of autism, such as, misunderstanding non-verbal interactions or inappropriately responding in reciprocal conversations (Hellström, 2019), may increase the risk of victimisation. Restricted and repetitive behaviours may make individuals stand out from their peers, increasing vulnerability to bullying (Sreckovic et al., 2014). They may also experience high levels of social isolation (Liptak et al., 2011; Orsmond et al., 2013) and stigma (Neely & Hunter, 2014).

The impact of victimisation is well-documented. For autistic individuals, bullying is associated with anxiety and depression (Mayes et al., 2013), low self-esteem (Reid &

¹Centre of Family and Forensic Psychology, School of Medicine, University of Nottingham, Nottingham, UK

²Academic Unit of Mental Health and Clinical Neuroscience, School of Medicine, University of Nottingham, Nottingham, UK

³School of Psychology, University of Nottingham, Nottingham, UK

Corresponding Author:

Grace Trundle, Centre of Family and Forensic Psychology, University of Nottingham, Yang Fujia Building, Jubilee Campus, Wollaton Road, Nottingham NG8 1BB, UK.

Email: gatrundle@standrew.co.uk

Batten, 2006) and suicidal ideation or attempts (Carter, 2009). Physical and sexual abuse increase the risk of suicidal ideation or attempts in autistic people (Richa et al., 2014). Victimization is associated with high levels of stress and symptoms of Post-Traumatic Stress Disorder (PTSD; Paul et al., 2018). Those who are victimised are at increased risk of being re-victimised (Pfeffer, 2016), perpetuating the cycle.

Given the increased risk of victimisation and clear detrimental outcomes, prevention is paramount. Several national and international acts and policies have been implemented. For example, in England, The Autism Act (2009) and the Fulfilling and Rewarding Lives strategy (HM Government, 2010, 2014) seek to increase the awareness and understanding of autism across public services and improve access to services and support in the community. However, measures are largely in response to victimisation, with less focusing on prevention. In 1998, Autism-Europe highlighted the need for prevention of violence and mistreatment against autistic individuals and outlined how educational programmes for autistic individuals and training for family and care professionals could help prevent victimisation.

Despite efforts, research suggests victimisation of autistic people is an ongoing problem. Hebron and Humphrey (2014) found 77% of over 800 autistic children in the UK were currently experiencing bullying. The Crime Survey for England and Wales found 9% of respondents with a 'social or behaviour impairment' (which included autism) experienced sexual assault in the three years prior to 2018, which was higher than rates for individuals with other conditions (Office for National Statistics, 2019). To inform prevention efforts, a clear understanding of the victimisation experiences of autistic individuals is required. Previous reviews have focussed on specific types of victimisations, such as bullying and cyberbullying (See: Beckman et al., 2020; Maiano et al., 2016; Sreckovic et al., 2014). However, focussing only on one specific victimisation type may prevent understanding of the multifaceted risk faced by this population. For instance, Pfeffer (2016) found autistic people who experienced victimisation are likely to be re-victimised in the same year, sometimes differently to their first victimisation. The traumatic impact of victimisation can be cumulative and in autistic individuals, increased exposure to traumatic events has been associated with greater severity of PTSD symptoms (Rumball et al., 2021). Thus, examining a single victimisation type could underestimate the impact of these experiences, overlooking the potential for multiple incidents across a variety of contexts. Establishing an estimate of overall victimisation rates for autistic individuals could highlight social problems and identify gaps in existing research relevant to directing prevention efforts.

Aims

This systematic review and meta-analysis considers a wide range of victimisation types (e.g. bullying, sexual victimisation, crime and child abuse), providing an overall

Table 1. Search Terms Included in the Systematic Search.

Condition	Outcome
Autism	Victim
Autism spectrum disorder	Abuse
Autism spectrum condition	Bully
Autistic	Maltreatment
Asperger	Discrimination
Asperger's disorder	Neglect
Asperger disorder	Trauma
Asperger's syndrome	Crime victim
Asperger syndrome	Adverse
ASD	Aggression
ASC	Crime
Autistic disorder	

prevalence rate of victimisation in autistic individuals. To the authors' knowledge, this is the first time a diversity of victimisation experiences has been systematically reviewed in autistic people.

Method

Protocol and Registration

The protocol was designed in line with Preferred Reporting Items for Systematic Review and Meta-Analysis guidance (Shamseer et al., 2015) and was registered on PROSPERO (https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=151726)

Inclusion Criteria

Studies were selected according to the following criteria:

1. *Participants:* Adults and children were included.
2. *Condition:* Individuals diagnosed with autism, including Asperger's Disorder and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), using all versions of the Diagnostic and Statistical Manual of Mental Disorders and the International Statistical Classification of Diseases and Related Health Problems, or those whereby the severity of symptoms reached the clinical threshold for autism assessed using validated instruments. For example, the Social Responsiveness Scale (Constantino & Gruber, 2005) measures autistic traits and has been shown to have predictive validity against the diagnostic criteria of autism (Chan et al., 2017).
3. *Outcome:* Studies reporting a prevalence rate of victimisation were included.
4. *Study Design:* Quantitative studies only. Case studies, book reviews and systematic reviews were excluded.

5. *Other restrictions:* There were no restrictions by setting type, publication date or language. Published and unpublished materials were included.

Information Sources and Search Strategy

Search strategies were developed using keywords identified through scoping searches and controlled vocabulary (See Table 1). Searches were conducted by XX [blinded for peer review] in September 2019 in PsychINFO (via Ovid), MEDLINE (1946-present; via Ovid), EMBASE (via Ovid), CINAHL (via EBSCOhost) and the International Bibliography of the Social Science (via ProQuest). Unpublished theses were identified through DART Europe E-Thesis Portal, ProQuest Dissertations and Thesis A&I and Open Grey. Reference lists of included studies or relevant reviews were also explored.

Selection Process

A total of 17,079 records were identified through literature searching. 6567 duplicate records were removed, and the title and abstract of the remaining 10,512 were screened against the eligibility criteria, resulting in a further 10,221 exclusions. In total, 291 titles met the inclusion criteria; full reports were sought. Nine papers could not be accessed, and one paper could not be translated. One additional paper was identified through reference searching. Available full text papers were reviewed by XX [blinded for peer review] to determine if they met the inclusion criteria. Two hundred and forty-five records were excluded.

Data Extraction

Information extracted included: publication type, country of origin, funding source, participant characteristics including diagnosis, age, and intellectual ability, study design, recruitment procedures, assessment tools, statistical techniques and prevalence rates of victimisation. Information relevant to risk of bias was documented during the data extraction process.

Quality Assessment

Quality assessment was conducted using Critical Appraisal Skills Programme Checklists (CASP, 2018). This considered the appropriateness of the study design, choice of outcome measure, statistical issues, reliability of measures used, recruitment processes and precision of the results. Risk of bias was separated into six types of bias: selection, sampling, performance, attrition, measurement and reporting bias. Judgement on the risk of bias was rated as 'high', 'medium' and 'low' as per the Centre for Reviews and Dissemination (2008) guidance. If a study obtained a high-risk rating for any of the categories, it was excluded from the review. Although stringent criterion, it ensured the included studies were of high

quality. Quality assessment was completed by XX [blinded for peer review] and an independent party (XX) [blinded for peer review] for improved reliability: no discrepancy between reviewers was found. Forty-seven studies underwent quality assessment. Thirteen received at least one high-risk rating for bias and were excluded from the review. The selection process is detailed in Figure 1. Figure 2 depicts the risk of bias present in the thirteen excluded studies. Thirty-four studies did not present a high risk of bias and were included in this review.

Meta-Analysis

The primary measure of interest, the prevalence rate of victimisation, was integrated across studies using meta-analytic methods. Prevalence rates across the studies were pooled using the inverse-variance heterogeneity model. This required the double arcsine square root transformation method to stabilise the variance (Barendregt et al., 2013). To simplify interpretation, the results were back transformed to natural proportions. A random effects model was used as study-level variability was anticipated. Homogeneity was assessed using I^2 . All analyses were performed using MetaXL version 5.3 (EpiGear International, 2016).

There were several considerations when determining data to be included in the meta-analysis. First, for cases wherein the study measured victimisation in the past year and lifetime (Paul et al., 2018; Pfeffer, 2016), prevalence of lifetime victimisation was included in the meta-analysis, as this incorporated past-year victimisation. Secondly, for studies wherein multiple prevalence rates were provided via multiple reporters, decisions were made with consideration of empirical literature.

Ashburner et al. (2019) found no significant difference between adolescent self- and parent-reports of bullying and cyberbullying victimisation. As autistic self-reports have been found to have validity (Keith et al., 2019; Van Roekel et al., 2010), self-reported bullying and cyberbullying was therefore included in the meta-analysis, as two separate prevalence rates (A = bullying, B = cyberbullying). Hebron and Humphrey (2014) found a positive correlation between parent- and teacher-reports of bullying. Sensitivity analysis identified that neither had a substantial effect on heterogeneity. As parents may witness bullying that occurs outside the classroom, parent-reported data were included in the meta-analysis. Hu et al. (2019), Van Schalkwyk et al. (2018) and Chou et al. (2019) found low agreement between parent- and self-reported victimisation. Similarly, Van Roekel et al. (2010) found low agreement between teacher-reported bullying victimisation and peer- and self-reported victimisation. As participants were older children, it is possible that parents and teachers are unaware of victimisation experiences (Van Schalkwyk et al., 2018), especially for cyberbullying (Hu et al., 2019). Thus, self-reported victimisation was favoured for inclusion in the meta-analysis for these studies.

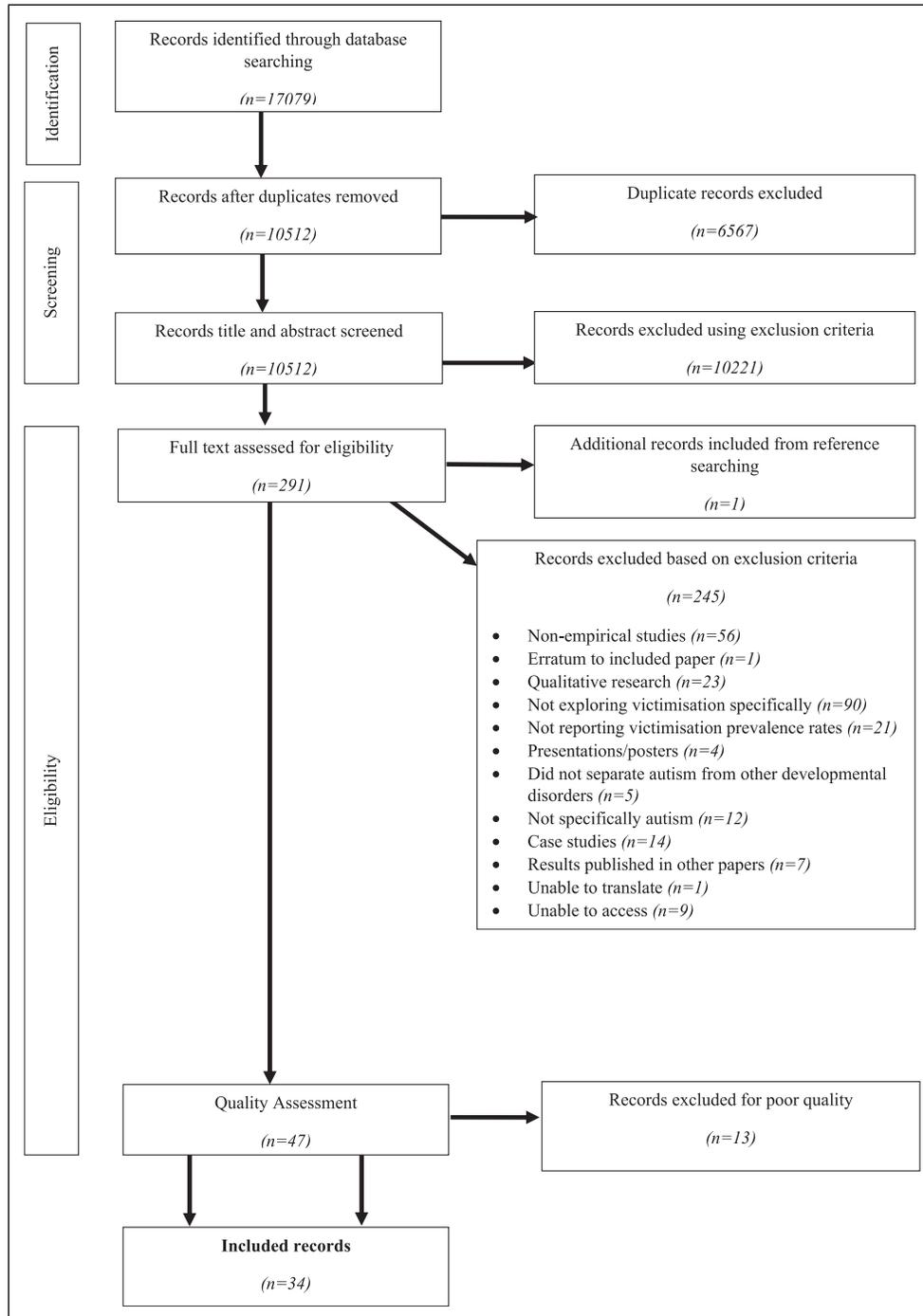


Figure 1. Prisma flow diagram showing Study Selection Process.

Thirdly, [Toseeb et al. \(2019\)](#) provided prevalence rates for current experiences of bullying at two time points for the same sample. The most recently captured prevalence rate was used in the meta-analysis. Finally, two studies were not included in the meta-analysis but were qualitatively synthesised due to the nature of the data presented. [Doyle \(2016\)](#) provided prevalence rates for specific bullying behaviours rather than

an overall prevalence rate for bullying. For example, ‘a teen left them out of an activity they really wanted to be included in’ ([Doyle, 2016, Table 1, p. 48](#)). It was not possible to synthesise this data into an overall prevalence rate. [Hall-Lande et al. \(2015\)](#) provided prevalence rates for types of maltreatment experienced by a sample of children, all of whom had been maltreated. These results would influence the

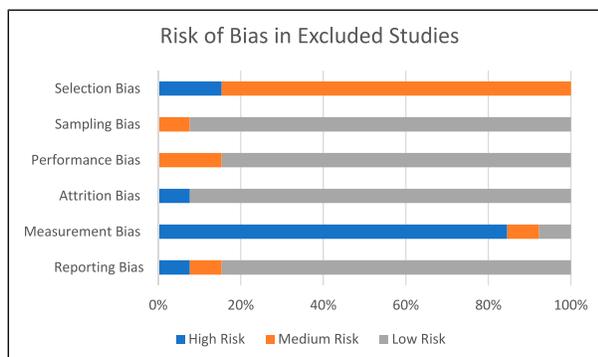


Figure 2. Risk of bias graph for the 13 excluded studies.

meta-analysis as the sample would be biased to victimised children alone.

Results

Study Characteristics

In total, 633,051 participants were involved in 34 included studies, which included individuals with autism, Asperger's Syndrome, and PDD-NOS, and comparison groups of individuals with intellectual disabilities, physical disabilities and those without disabilities. Participant age ranged from one to 57 years. Seventeen studies originated in the United States, three in the United Kingdom,^{1,14,26,27} three in Taiwan,^{9,15,17} three in Canada^{6,7,32} and two in Australia.^{2,18} One study was conducted in each of the following: Sweden,³ China,¹ South Korea,¹⁶ South America,¹⁹ the Netherlands³⁰ and France.²³

Most studies were cross-sectional ($n = 27$). Three utilised a case-control design,^{3,23,25} three used cohort design,^{12,13,17} and one was a prospective longitudinal study.²⁷ Seven studies recruited participants from the general population.^{12,13,17,18,25,26,27} Eight utilised clinical samples from psychiatric units or inpatient/outpatient services.^{1,3,4,9,15,20,21,29} Eighteen studies recruited participants from the community through local schools, support groups and autism services. One study used a community and clinical sample.²³ Six studies involved adult participants,^{3,5,6,11,25,33} and twenty-eight studies involved children and adolescents.

Victimisation was measured using questionnaires ($n = 28$), official reports^{12,13,18,22} and clinical interviews.^{3,20} Questionnaires included the School Bullying Experience Questionnaire (Weiss et al., 2015), the Social Vulnerability Questionnaire (Fisher et al., 2012), the Juvenile Victimization Questionnaire, including the Adult Retrospective Version (Hamby et al., 2005) and author-designed questionnaires.^{1,2,3,5,6,10,19,23,29,30,34} Ten studies utilised self-report only,^{1,3,5,6,17,25,26,27,28,33} eleven used parent-reports only,^{4,7,11,16,19,20,21,23,24,32,34} seven used self- and parent-reports,^{2,8,9,10,15,29,31} one used parent-and teacher-reports¹⁴ and one utilised teacher-, self- and peer-reports of

victimisation.³⁰ Time scales for victimisation ranged from 'current' experiences to experiences throughout the lifetime. Included studies are described in Table 2.

Risk of Bias

There was some evidence of bias in the included studies which is presented in Figure 3. The most common types of bias present were measurement and selection bias.

Prevalence of Victimization

The pooled prevalence of victimisation in autistic individuals was 44% (See Figure 4). There was substantial heterogeneity between the studies ($I^2 = 99%$). Sensitivity analysis indicated that no single study had a substantial impact on heterogeneity.

Subgroup Analysis. Exploration of heterogeneous results was conducted using subgroup analysis (Deeks et al., 2021). Subgroup analysis was chosen over meta-regression as all moderator variables were categorical. Results of the subgroup analysis are presented in Table 3.

Sample Characteristics. Subgroup analysis identified a pooled prevalence rate of 39% for studies utilising child or adolescent participants (age < 18 years), and 66% in studies using adult autistic participants (age > 18 years). For clinical samples, the pooled prevalence rate for victimisation was 39%. In the local community samples (e.g. samples recruited from one local area), pooled prevalence rate for victimisation was 54%. In general population samples, the pooled prevalence rate of victimisation was 14%. Substantial heterogeneity was present across all subgroups.

Of the included studies, 13 did not report on the cognitive abilities of the participants and several studies used a sample with a wide range of intellectual abilities (e.g. Brenner et al. (2018) report verbal IQ scores to range from 30 to 125). Nevertheless, 10 studies reported their samples to be 'high functioning' or that the sample scored greater than 70 on a validated measure of intellectual ability^{3,6,9,15,21,23,29,30,31,33} and two studies provided separate prevalence rates for those with and without learning disabilities (Hwang et al., 2018; McDonnell et al., 2019). Thus, using 14 sets of data, pooled prevalence rates of victimisation for those without a learning disability was 49%, even higher than the 28% for those with a learning disability.

Subgroup analysis including 27 studies from 5 countries was conducted. The pooled prevalence of victimisation was 43% for the US, 27% for the UK, 19% for Taiwan, 23% for Australia and 76% for Canada. Substantial heterogeneity was present across all subgroups, except the Canada subgroup ($I^2 = 0$).

Measurement Characteristics. Subgroup analysis of victimisation type identified a bullying victimisation pooled

Table 2. Descriptive Information for Included Studies.

Reference Number. Authors; Country of Origin	N by Diagnosis	Age Range (Years)	Time Frame	Type of Victimization
1. Adams et al. (2016); US	Asperger's disorder (<i>n</i> = 21), Autism (<i>n</i> = 22), PDD-NOS (<i>n</i> = 9), multiple ASD diagnoses (<i>n</i> = 2).	10–17	Past month	Bullying
2. Ashburner et al. (2019); Australia	Asperger's disorder (<i>n</i> = 44), ASD (<i>n</i> = 26), PDD-NOS (<i>n</i> = 13), high-functioning Autistic disorder (<i>n</i> = 4), not specified (<i>n</i> = 2).	11–16	Past six months	Bullying, cyberbullying
3. Bejerot & Humble (2013); Sweden	ASD (<i>n</i> = 93), ADHD (<i>n</i> = 128), other severe psychiatric problems (<i>n</i> = 56).	18–57	In childhood	Bullying
4. Brenner et al. (2018); US	ASD (<i>n</i> = 350).	4–21	Lifetime	Child abuse
5. Brown et al. (2017); US	ASD (<i>n</i> = 158), other disability (<i>n</i> = 7018), none (<i>n</i> = 27,703).	Undergraduates	Past five years	Sexual victimisation
6. Brown-Lavoie et al. (2014); Canada	Autism (<i>n</i> = 52), Asperger's syndrome (<i>n</i> = 39), PDD-NOS (<i>n</i> = 4), and typically developing individuals (<i>n</i> = 117).	19–43	Lifetime	Sexual victimisation
7. Cappadocia et al. (2012); Canada	Asperger syndrome (54%), high functioning Autism (14%), PDD-NOS (13%), and Autism (19%).	5–21	Past month	Bullying
8. Chan et al. (2018); China	Physical disability (<i>n</i> = 309), learning and developmental disabilities (<i>n</i> = 834), intellectual developmental disability (<i>n</i> = 389), internalising disorder/mental illness/mood disorder (<i>n</i> = 43), and ASD (<i>n</i> = 330).	10–18	Past year	Bullying, cyberbullying, child maltreatment, Conventional crime, Peer/sibling victimisation, Indirect/witnessed victimisation
9. Chou et al. (2019); Taiwan	ASD (<i>n</i> = 219).	11–18	Past year	Bullying
10. Doyle (2016); US	Autism or Autistic disorder (43%), Asperger's syndrome (33%), PDD-NOS (21%), and 'unclear diagnosis' (3%).	10–18	Past six months	Bullying
11. Fisher et al. (2013); US	ASD (<i>n</i> = 29), Williams syndrome (<i>n</i> = 38), and down syndrome (<i>n</i> = 36).	Mean (SD): ASD 25.38 (10.39), Williams syndrome 25.39 (6.72), down syndrome 23.67 (7.71)	Lifetime	Monetary crime, Physical or sexual abuse, Teasing/persuasion
12. Fisher et al. (2019); US	ASD (<i>n</i> = 387) and no disability (<i>n</i> = 23,919).	10	Lifetime	Child maltreatment
13. Hall-Lande et al. (2015); US	ASD (<i>n</i> = 162), other (<i>n</i> = 3025), and no disability (<i>n</i> = 6349).	1–20	Lifetime	Child maltreatment
14. Hebron & Humphrey (2014); UK	ASD (<i>n</i> = 841).	5–15	Current	Bullying
15. Hu et al. (2019); Taiwan	ASD (<i>n</i> = 219).	11–18	Past year	Cyberbullying
16. Hwang et al. (2018); South Korea	ASD without ID (<i>n</i> = 71), ASD with ID (<i>n</i> = 15), social communication disorders (<i>n</i> = 8), control group (<i>n</i> = 12,320).	7–12	Current	Bullying
17. Lung et al. (2019); Taiwan	Learning disability (<i>n</i> = 25), ID (<i>n</i> = 11), ADHD (<i>n</i> = 33), ASD (<i>n</i> = 8), no disability (<i>n</i> = 1484).	12	Lifetime	Bullying
18. Maclean et al. (2017); Australia	ID (<i>n</i> = 8551), down syndrome (<i>n</i> = 552), birth defect/cerebral palsy (<i>n</i> = 30090), ASD (<i>n</i> = 2253), conduct disorder (<i>n</i> = 3924), and mental or behavioural disorder (<i>n</i> = 19,813).	Children born between 1990 and 2010	Lifetime	Child maltreatment

(continued)

Table 2. (continued)

Reference Number. Authors; Country of Origin	N by Diagnosis	Age Range (Years)	Time Frame	Type of Victimization
19. Mallory (2014); south America	ASD (<i>n</i> = 47), no disability (<i>n</i> = 32), other disability (<i>n</i> = 32).	9–15	Past month	Peer victimisation
20. Mandell et al. (2005); US	ASD or Asperger's disorder (<i>n</i> =156).	Mean (SD): 11.9 (3.8)	Lifetime	Child abuse
21. Mayes et al. (2015); US	ASD (<i>n</i> = 329), ADHD combined (<i>n</i> = 566), ADHD Inattentive (<i>n</i> = 235), depression/anxiety (<i>n</i> = 71), eating disorder (<i>n</i> = 90), ID (<i>n</i> = 230), and control group (<i>n</i> = 186).	Mean: ASD 8.6, ADHD combined 8.9, ADHD Inattentive 9.3, depression/anxiety 11.1, eating disorder 13.8, ID 8.6, and controls 8.7.	Past two months	Bullying
22. McDonnell et al. (2019); US	ASD (<i>n</i> = 316), ASD and ID (<i>n</i> = 291), ID (<i>n</i> = 1280), and control group (<i>n</i> = 3101).	Data collected between age 2–8 to 18	Lifetime	Child maltreatment
23. Paul et al. (2018); France	ASD (<i>n</i> = 39) and control (<i>n</i> = 53)	7–18	Past year, lifetime	Bullying, sexual victimisation, conventional crime, Witness/indirect victimisation
24. Pfeffer (2016); US	Autism or Autistic disorder (<i>n</i> = 111), Asperger's syndrome (<i>n</i> = 74), PDD-NOS (<i>n</i> = 4), ASD (<i>n</i> = 13), and 'my child no longer has ASD' (<i>n</i> = 1).	5–18	Lifetime, past year	Property crime, Assault/bullying, Witnessed/indirect crime, sexual victimisation, child maltreatment
25. Roberts et al. (2015); US	In the highest quintile for ASD traits (<i>n</i> = 213)	Birth year 1957–1958, data collected 2008	In childhood	Child maltreatment
26. Rowley et al. (2012); UK	ASD (<i>n</i> = 100; only 89 provided victimisation scores), ID (<i>n</i> = 43), language disorder (<i>n</i> = 10), hyperkinetic disorder (<i>n</i> = 13), and neuro-developmental conditions (<i>n</i> = 14).	10–12	Past six months	Bullying
27. Toseeb et al. (2019); UK	ASD (<i>n</i> = 231) and controls (<i>n</i> = 8180).	14	Current	Sibling bullying
28. Twyman et al. (2010); US	No diagnosis (<i>n</i> = 73), cystic fibrosis (<i>n</i> = 22), ASD (<i>n</i> = 32), learning disorders (<i>n</i> = 32), ADHD (<i>n</i> = 100), and behavioural or mental health disorders (<i>n</i> = 33).	8–17	Current	Bullying
29. Ung et al. (2016); US	ASD (<i>n</i> = 79 children, 81 parents).	9–17	Past year	Cyberbullying
30. Van Roekel et al. (2010); The Netherlands	ASD (<i>n</i> = 230) and controls (<i>n</i> = 24).	12–19	Current	Bullying
31. Van Schalkwyk et al. (2018); US	ASD (<i>n</i> = 12), Asperger's syndrome (<i>n</i> = 9), PDD-NOS (<i>n</i> = 7), and Autism (<i>n</i> = 5).	Mean (SD): 16.4 (1.58)	Past month	Bullying
32. Weiss et al. (2015); Canada	Asperger's syndrome (55%), high functioning Autism (14%), PDD-NOS (11%), and Autism (19%).	12–21	Past month	Bullying
33. Weiss & Fardella (2018); US	ASD (<i>n</i> = 45) and control group (<i>n</i> = 42)	18–54	Lifetime	Maltreatment, sexual victimisation Property crime, physical assault, peer/sibling victimisation Witness/indirect victimisation
34. Zablotzky et al. (2014); US	Autistic disorder (<i>n</i> = 487), Asperger's syndrome (<i>n</i> = 294), and PDD-NOS and other ASD grouped (<i>n</i> = 434).	6–15	Past month, Lifetime	Bullying

ASD = Autism Spectrum Disorder; ADHD = Attention Deficit Hyperactivity Disorder; ID = Intellectual Disability; PDD-NOS = Pervasive Developmental Disorder Not Otherwise Specified.

prevalence rate of 47%. Doyle (2016) found the most frequent bullying behaviours experienced by autistic children were being left out of activities (72%), being teased (50%) and being threatened or beaten up (43%). Pooled prevalence of child abuse was 16%. Hall-Lande et al. (2015) found that in children who had experienced abuse, 5.8% had experienced neglect, 35% physical abuse, 8.3% sexual abuse, 1.3% mental injury and emotional harm and 0.6% medical neglect. Pooled prevalence rates in the current data were 40% for sexual victimisation (not classified as child abuse by the included studies), 13% for cyberbullying and 84% for multiple forms of victimisation measured altogether. There was substantial heterogeneity in all these subgroups, except for cyberbullying. Subgroup analysis by reporter used found a pooled prevalence of 34% for self-reporters, 63% for parent-reporters and 12% for official records.

Subgroup analysis of time frame for reporting victimisation was conducted on 30 studies. Three studies were not included as they reported other timeframes than the identified time frames (e.g. past two months). The pooled prevalence of current victimisation was 30%. For victimisation in the past month, pooled prevalence was 51%. For victimisation in the past year, pooled prevalence was 21%. For victimisation in childhood, pooled prevalence was 68%. Pooled prevalence of lifetime victimisation was 49%. Substantial heterogeneity was present across all subgroups.

Additional Subgroup Analysis. Additional analysis was conducted within subgroups (e.g. adults only and bullying only) to examine the remaining heterogeneity. Two analyses indicated reduced heterogeneity. In studies using adult participants, prevalence rates of victimisation in childhood were 79% ($I^2 = 0\%$). Similarly, when examining child abuse, 28% of individuals within a clinical sample reported experiencing child abuse ($I^2 = 0\%$). Thus, heterogeneity may be explained by a combination of moderating factors rather than single influences.

Discussion

This systematic review and meta-analytic review assessed the prevalence of victimisation in autistic individuals. To the author's knowledge, this was the first attempt to synthesise prevalence rates of different types of victimisations to provide an overall prevalence estimate. The meta-analysis found a pooled prevalence rate for victimisation in autistic individuals of 44%, demonstrating significant victimisation in autistic individuals. This is important as victimisation is associated with anxiety, conduct problems, aggression and suicidal behaviour in autistic individuals (Paul et al., 2018; Sedgewick, 2018). However, these results are tentative pending further investigation due to high study heterogeneity. An overview of critical findings is presented in Table 4.

Five studies examined multiple types of concurrent victimisation (Chan et al., 2018; Fisher et al., 2013; Paul et al.,

2018; Pfeffer, 2016; Weiss & Fardella, 2018), finding a pooled prevalence rate of 84%, illustrating the importance of measuring various forms of co-existing victimisation. Pfeffer (2016) found that autistic young people who experienced victimisation were likely to be re-victimised in the same year, sometimes differently to their first victimisation. The prevalence of victimisation may be higher than recorded, as studies examining discrete forms of victimisation (e.g. bullying or sexual victimisation) do not measure other victimisation

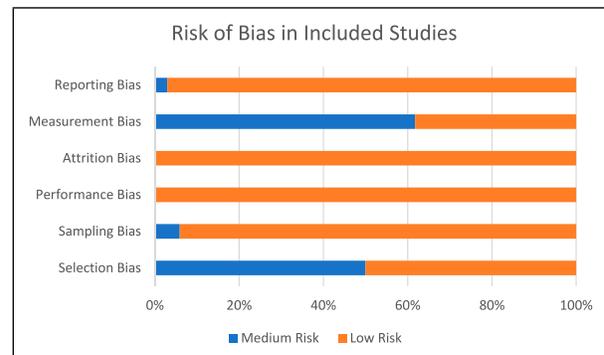


Figure 3. Risk of bias graph for the 34 included studies.

experiences. Future research examining the prevalence or impact of victimisation should account for the possibility of multiple victimisation experiences, for example, by using the Juvenile Victimization Questionnaire (Hamby et al., 2005) which assesses five categories of victimisation.

Subgroup analysis illustrated a higher prevalence of victimisation in community compared to clinical groups (54% and 39%, respectively). Those in the clinical groups may have more severe difficulties (due to autism or co-occurring conditions), so receive more support and access to intervention. This may also explain the greater prevalence rates of victimisation in individuals without learning disabilities. Additionally, participants were recruited from different community settings, including mainstream schools and special education schools. School settings is an important factor in victimisation as mainstream settings may offer less social protection to autistic students (Zablotsky et al., 2014), leading to greater victimisation in these settings. These factors may influence prevalence rates and heterogeneity within these subgroups.

Another important study-level factor is informant type. In autistic people, self-report has been considered to lack reliability (Mazefsky et al., 2011). Difficulty understanding social situations may affect autistic children's ability to answer questions on victimisation (Loveland et al., 2001). Nonetheless, autistic adolescents provide more comprehensive assessment of internal experiences than their parents (Keith et al., 2019). Further, Van Roekel et al. (2010) found autistic adolescents had similar perceptions of bullying to adolescents

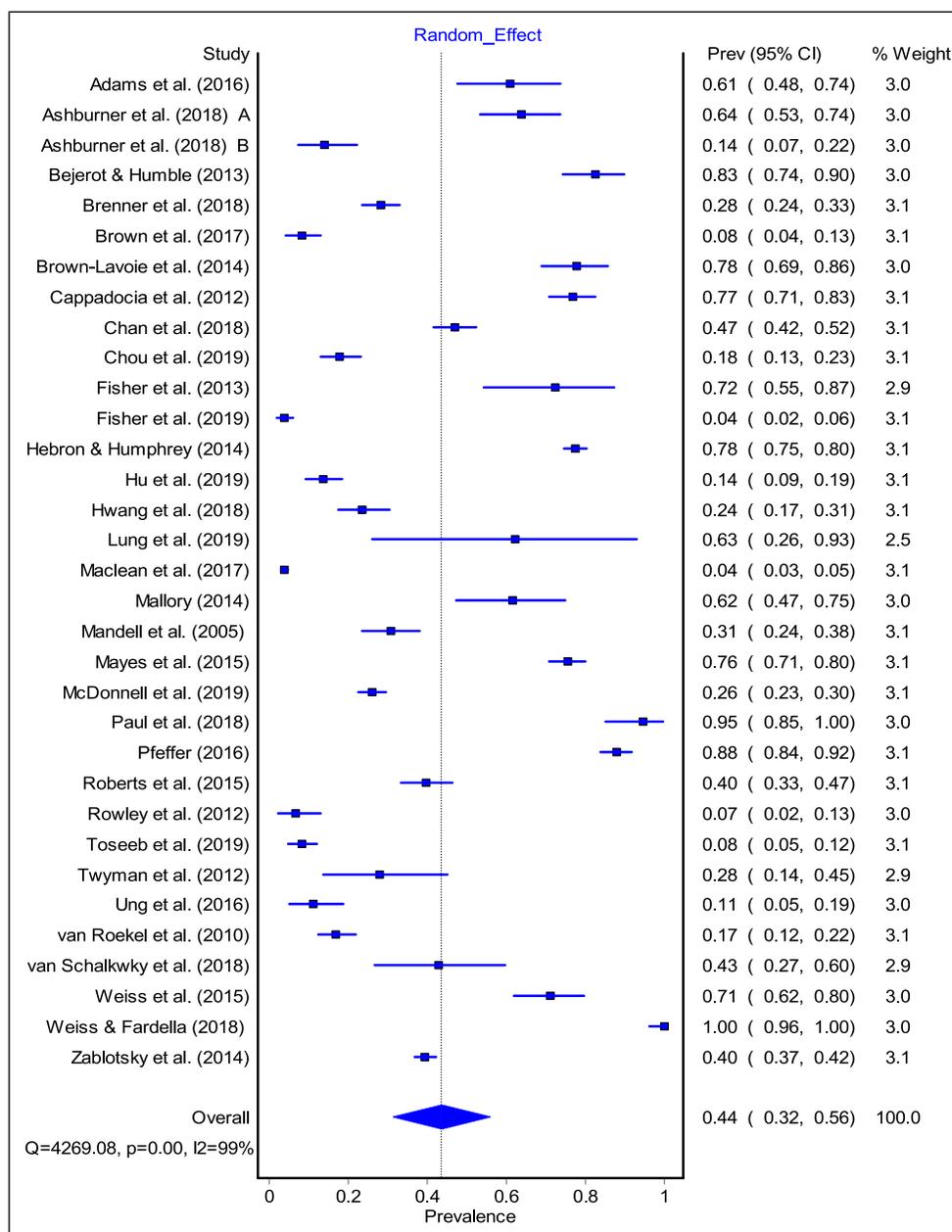


Figure 4. Pooled Prevalence rates for reported victimisation.

from the general population. There are also challenges in informant-reports of victimisation; parents may underreport bullying (Holt et al., 2008), peers may not witness victimisation (Van Roekel et al., 2010), and teachers may interpret autistic behaviour as bullying (Chou et al., 2019). Subgroup analysis demonstrated higher prevalence rates when parents reported victimisation than self-reporters. However, heterogeneity remained, indicating that choice of reporter alone does not influence prevalence. Future research should utilise multiple reporters to build a comprehensive understanding of victimisation experiences (Rubin et al., 2006): each reporter

has their own predictive validity since each observes behaviour in different contexts (Achenbach et al., 1987)

Overall, this review shows a large proportion of autistic people experience victimisation in various forms. At a societal level, greater understanding and acceptance of autism could reduce the risk of victimisation. Education, health and social services should be set up to better understand and support autistic people. This review provides preliminary insights into the development, structure or implementation of prevention programmes. This may include educational interventions to improve knowledge about and attitudes towards autistic

Table 3. Pooled Prevalence Rates and I² for Subgroup Analysis of Moderating Variables.

Subgroup Analysis (Number of studies)	Pooled Prevalence, %	95% Confidence Intervals	I ² , %
Victimisation Type			
Bullying (<i>n</i> = 17)	47	33%–61%	99
Child Abuse (<i>n</i> = 5)	16	4%–31%	99
Sexual victimisation (<i>n</i> = 3)	40	2%–83%	99
Cyberbullying (<i>n</i> = 3)	13	10%–17%	0
Any victimisation (<i>n</i> = 5)	84	59%–100%	98
Participant Age			
Children/Adolescents (<i>n</i> = 27)	39	26%–52%	99
Adults (<i>n</i> = 6)	66	31%–96%	99
Reporter			
Self (<i>n</i> = 18)	34	21%–49%	99
Parent (<i>n</i> = 12)	63	48%–77%	99
Official records (<i>n</i> = 2)	12	0%–40%	99
Time frame			
Current (<i>n</i> = 4)	30	0%–75%	100
Past month (<i>n</i> = 9)	51	36%–66%	96
Past year (<i>n</i> = 4)	21	6%–40%	97
In childhood (<i>n</i> = 4)	68	33%–97%	99
Lifetime (<i>n</i> = 9)	49	22%–77%	99
Sample			
Clinical (<i>n</i> = 8)	39	19%–60%	98
Local community (<i>n</i> = 18)	54	38%–69%	99
General population (<i>n</i> = 6)	14	4%–26%	98
Country			
United States (<i>n</i> = 15)	43	28%–59%	99
United Kingdom (<i>n</i> = 3)	27	0%–100%	100
Taiwan (<i>n</i> = 3)	19	10%–30%	79
Australia (<i>n</i> = 3)	23	0%–67%	99
Canada (<i>n</i> = 3)	76	71%–80%	0
Learning disability status			
Without learning disability (<i>n</i> = 12)	49	29%–70%	99
With learning disability (<i>n</i> = 2)	28	20%–38%	36

individuals (See, [Campbell et al., 2019](#); [Staniland & Byrne, 2013](#)). This could reduce stigma and discrimination. Skills training may help autistic individuals to identify when they are being victimised and know how to seek support.

Tailored prevention could be developed based on victimisation type and informed by targeted systematic reviews. For instance, subgroup analysis found higher rates of bullying and sexual victimisation than cyberbullying and child abuse for autistic individuals (potentially due to differences in the risk factors for each type of victimisation). However, the highest prevalence rate for victimisation was found for studies measuring ‘any’ victimisation, reiterating the importance of conducting this review. Collaboration across multiple settings (e.g. schools, social services and community support groups) is crucial for victimisation prevention.

The review also illustrates a gap in research examining criminals victimising autistic adults. Most studies in this review were conducted in the US, limiting generalisability (See: [Chan et al., 2018K](#). [L. Chan et al., 2018](#)) and most are

conducted in high-income countries. Cultural context is an important factor as the incidence of victimisation as autistic traits may be expressed and interpreted differently in different cultures ([Freeth et al., 2013](#)). Furthermore, most studies did not report socioeconomic status and only half the studies reported on race or ethnicity. Among those who did report on ethnicity, most described male Caucasian participants. This information would be useful for considering the influence of demographic variables on victimisation and assist in understanding the generalisability of the findings. Another useful consideration would be to explore whether there is difference between online and offline victimisation, given the increased use of social and learning media platforms. A summary of the implications for research, policy and practice can be found in [Table 5](#).

Three main limitations of studies included in this review include the following: (1) lack of validation of autism diagnoses (reliance of informant reports), (2) not accounting for co-occurring conditions and (3) inconsistency across studies

Table 4. Critical Findings.

- Meta-analysis found 44% of autistic people experience victimisation
- In studies examining various forms of victimisation (e.g. bullying, child abuse and crime victimisation) concurrently, the pooled prevalence was 84% illustrating the need to consider the possibility of different victimisation types in future research.
- Environments or contexts where there is likely to be greater support (e.g. clinical settings, surrounding those with comorbid learning difficulties) have lower prevalence rates of victimisation.
- Most research focussed on bullying victimisation and there was a sparsity of research examining crime victimisation
- There is a sparsity of research about the victimisation of autistic adults

Table 5. Implications for Practice, Policy and Research.

- Collaboration between social, health, and education settings is essential for victimisation prevention.
- Clinicians would benefit from knowing about an individuals' full victimisation history as autistic individuals can experience a range of victimisation experiences.
- Researchers could consider using measures that record multiple types of victimisations and standardised measures used across studies could improve future meta-analyses.
- More research is required into the experiences of crime victimisation (property crime, theft, etc.) and the experiences of victimisation in autistic adults.
- Triangulation of self- and informant-report data, plus official records may improve the reliability of victimisation prevalence rates.

in definition of victimisation type. Although parental reports have been used to estimate autism prevalence with good sensitivity and specificity (Russell et al., 2015), validated diagnoses would improve the validity of the results. Additionally, many studies did not report on the presence of learning disabilities. Learning disabilities have been found to increase the risk of maltreatment allegations in autistic children (Macleane et al., 2017). However, this review found greater rates of victimisation in those without a learning disability. Greater consideration of learning disabilities could reduce heterogeneity in prevalence rates of victimisation. Finally, definitions of victimisation were provided to participants in some studies, but not documented in others. As such, constructs may have been interpreted differently between participants (Sreckovic et al., 2014). For example, the term 'peer victimisation' has been used interchangeably with bullying within victimisation literature but may be interpreted differently by participants.

Disclosure is an important consideration for future victimisation research, as fear of reporting victimisation may influence the findings (Pfeffer, 2016). For example, survivors of sexual abuse may feel unable to disclose their experiences (Sable et al., 2006), and stigma associated with revealing abuse may influence caregiver-reports (Mandell et al., 2005).

Researchers should be conscious of potential recruitment bias: most studies do not report how their study aims were presented to potential participants. The exception was Weiss and Fardella (2018) who stated their study was a project about interpersonal violence.

Strengths and Limitations

Strengths of this review include more than 17,000 records identified through the initial search procedures, the use of validated scales in many studies, a large number of participants, and stringent quality assessment procedures. However, there was still a low to moderate risk of bias present in the included studies. The main limitation is substantial heterogeneity in the pooled prevalence rates. Explanations include differences in victimisation measures and variations in timeframes used, co-occurring psychiatric conditions, or a range of participant-level differences such as socioeconomic status, age of diagnosis and ethnicity. The results of this study should therefore be interpreted with caution and replicated considering new evidence. An additional limitation relates to search strategy, as 'PDD-NOS' and 'prevalence' were not included as search terms in the review, an oversight which may have influenced the number of studies identified. Study selection was conducted by one researcher, which could have introduced bias into the selection process. Finally, several papers could not be accessed or translated. It is unclear whether the inclusion of these studies would have produced more homogenous results.

Conclusions

This review found a pooled prevalence rate of victimisation of 44% in autistic individuals. The available literature exploring child abuse, sexual victimisation and conventional crime in autistic individuals was smaller than studies about bullying. More research is required in these areas to clarify the experiences of autistic individuals and identify suitable interventions to reduce the risk of victimisation. Future research should explore co-occurring conditions and protective factors in victimisation.

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ORCID iD

Grace Trundle  <https://orcid.org/0000-0001-8057-0457>

Notes

1. Superscript refers to study reference numbers in Table 2.

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Author Biographies

Dr. Grace Trundle, Forensic Psychologist from the University of Nottingham. Her doctoral thesis focussed on victimisation and offending in individuals with Autism and Pathological Demand Avoidance.

Dr. Katy Jones, PhD, is an Assistant Professor of Applied Psychology for the Faculty of Medicine and Health Sciences at the University of Nottingham. She is interested in areas of forensic psychology, and understanding addictive behaviour, impulse control, and decision-making.

Professor Danielle Ropar, PhD, is a Professor for the Faculty of Science at the University of Nottingham who explores individual and group differences in clinical (e.g. autism) and non-clinical populations within the areas of social understanding and sensory processing. She established the Autism Research Team at the University of Nottingham.

Dr. Vincent Egan is a Chartered Clinical and Forensic Psychologist. He was also an Associate Professor for the School of Medicine at the University of Nottingham. His interests include personality and mental disorder in relation to offending, extremism, and sexual and violent offending.