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REVIEW PAPER

Therapeutic Supports for Neurodiverse Children Who Have Experienced Interpersonal Trauma: a Scoping Review

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Abstract

This review examined the therapeutic support literature for children with autism and/or an intellectual disability who have experienced interpersonal trauma. We captured studies that implemented a therapeutic support with this population and synthesised articles that made clinical practice recommendations. Fifty-two relevant articles were identified, and four patterns were uncovered. First, primary studies in this research domain are scant, diffuse, and largely lacking in methodological consistency. Second, the literature favoured therapeutic supports that relied less on verbal skills and/or demanded a high cognitive load. Further, parent/caregiver involvement was repeatedly emphasised. Finally, methods of therapeutic support delivery appeared consistent with the broader neurodevelopmental literature. Overall, these results provide an important first step toward establishing best practice for supporting these vulnerable children.

Introduction

Neurodiverse children, including those with autism spectrum disorder (autism) and/or an intellectual disability (ID), are at heightened risk of experiencing interpersonal trauma such as abuse, neglect, and exposure to family violence (Fang et al., 2022b). It is estimated that these children are approximately two to three times more likely to encounter traumatic events of an interpersonal nature relative to their typically developing counterparts (Fang et al., 2022b). Ecological systems theories regarding such vulnerability indicate that child-related factors such as a high dependence on caregivers and/or communication challenges interact with environmental factors such as parent mental health challenges to confer these children's risk of traumatic exposure (Ammerman et al., 1994; Fisher et al., 2008; Gore & Janssen, 2007; Hibbard & Desch, 2007; Howe, 2006; Sobsey, 2002; Verdugo et al., 1995).

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Interpersonal trauma can profoundly impact the mental health of neurodiverse children, as characterised by the onset of depressive symptomatology, self-injurious behaviour, and post-traumatic sequalae including intrusive thoughts, distressing memories, and sleep disturbance (Bleil Walters et al., 2013; Brenner et al., 2017; Mandell et al., 2005; McDonnell et al., 2019; Mehtar & Mukaddes, 2011; Paquette et al, 2017). Kerns et al. (2015) hypothesised that such difficulties manifest due to the emergence of new symptomatology and/or an exacerbation of a child's existing disability-related characteristics. Indeed, while this conceptual framework was initially developed to explain the intersection between autism and trauma, the high degree of overlap, co-occurrence, and shared interpersonal trauma vulnerability between children with autism and an ID suggests that this framework may further help to explain trauma-related sequalae in children with an ID (Matson & Shoemaker, 2009; McDonnell et al., 2019; Reiter et al., 2007).

Despite the significant research efforts directed toward understanding this group's vulnerability, it is currently unclear how to best support their mental health. This has likely been due in part to a siloed approach to disability and trauma research (Prock & Fogler, 2018) and a historical tendency to misattribute trauma-related difficulties to a child's primary neurodevelopmental diagnosis rather than to concurrent psychopathology (Mazefsky et al., 2012; Reiss et al., 1982). As a result, evidence-based therapeutic guidelines for

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this group of children are lacking, and best practice parameters have yet to be established.

The purpose of the current review was to examine the existing literature regarding therapeutic supports for children with autism and/or an ID who have experienced interpersonal trauma. We included therapeutic supports that emphasised psychological, social, emotional, and/or behavioural factors, and aimed to improve a child's mental health and/or functioning. We were particularly interested in the types of clinical techniques, strategies, and/or modalities that have been reported in the literature and their associated methods of delivery. The specific aims of our review were: 1) to capture studies that have implemented a therapeutic support directly with this group of children and to understand whether their methodological characteristics were similar enough to allow for comparison across studies; 2) to synthesise literature that has included clinical recommendations for working therapeutically with these children - while such recommendations have been traditionally overlooked, they have the potential to reveal patterns of consensus that can be used to guide future clinical and research endeavours; and 3) to integrate therapeutic supports pertaining to both autism and/or an ID into a cohesive body of work and consolidate research that has used inconsistent terminology to capture the interpersonal trauma construct.

Method

Given the expected paucity of empirical literature in this clinical domain, a scoping review was selected as the preferred review method due to its exploratory approach (Munn et al, 2018). The Joanna Briggs Institute (JBI) scoping review methodology was employed and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting guideline was followed (Peters et al., 2020; Tricco et al., 2018).

Eligibility Criteria

Eligibility criteria for an article differed based on whether the article had implemented a therapeutic support or made a clinical practice recommendation for working therapeutically with this group of children. Inclusion and exclusion criteria are presented in Table 1.

Search Strategy

The JBI three-step search strategy was employed for this review (Peters et al., 2020).

Table 1 Eligibility criteria

Inclusion criteria	
Implemented	A primary study that reported observational outcomes and/or used the following design(s): randomised trial, non-randomised trial, controlled before-after, interrupted time series, repeated measures, and case series
	Reported on participants aged 17 years or younger with autism and/or an ID who had been exposed to physical, emotional, or sexual abuse; physical or emotional neglect and/or family violence
	Implemented a therapeutic support[a] at the child and/or parent/caregiver level
	Written in English
Recommended	A peer-reviewed paper with original data (i.e., qualitative, quantitative, mixed), a review, commentary, or book chapter
	Reported on participants aged 17 years or younger with autism and/or an ID who had been exposed to physical, emotional, or sexual abuse; physical or emotional neglect and/or family violence
	Made a recommendation for working therapeutically with this group at the child and/or parent/caregiver level
	Written in English
Exclusion criteria	
	Reported on child protection, economic and pharmacological support, complementary, and/or alternative treatments[b]
	Had a service delivery rather than therapeutic focus wherein the policies, procedures, values, or practice frameworks adopted by a particular healthcare service were described without reference to a clinical technique, strategy, or modality
	Focussed on children or adolescents in forensic services (i.e., who have also been instigators of harm)
	Reported trauma as a primary cause of autism and/or an ID
	Trial registries and protocol publications, as these would not have provided original data on therapeutic supports that have been implemented or offered support recommendations

[a]The term therapeutic support encompassed discrete clinical techniques or strategies and/or modalities that emphasised psychological, social, emotional and/or behavioural factors, and aimed to improve a child's mental health and/or functioning

[b]Complementary and/or alternative treatments refer to a broad set of healthcare practices that are not part of that country's own tradition or conventional medicine and are not fully integrated into the dominant healthcare system (World Health Organisation, 2014)

Step one: A limited search of two online databases relevant to the topic (i.e. MEDLINE and PubMed) was conducted to identify initial keywords in the titles and abstracts. In consultation with a tertiary librarian, a comprehensive list of indexed terms and combinations of synonyms/interchangeable terms (i.e. syntax-combinations) was developed.

Step two: In October 2021, a targeted and comprehensive search using all relevant terms and database-specific age limits was applied across the following four databases: Ovid MEDLINE, Embase, Emcare, and PsychInfo. The search was not limited by date of publication or study design, and indexed terms were adapted to each of the databases. A full search strategy for MEDLINE is presented in Supplementary Table A.

Step three: A manual search of the reference lists of all eligible full-text sources was undertaken to identify additional articles that had not yet been included.

Selection of Literature

Three levels of screening were conducted. First, records which clearly met the exclusion criteria were reviewed and removed by one researcher (LK), after which the remaining records were screened by three researchers on the web-based software platform Covidence (LK, JB, and LM; Veritas Health Innovation 2015) at the title and abstract levels. Remaining records then underwent full-text review by two researchers (LK and JB), wherein any conflict was resolved through verbal consensus.

Data Extraction and Synthesis

An extraction form was developed and updated after trialling it on two eligible sources. Extraction differed according to whether the article had implemented a therapeutic support or made a clinical practice recommendation for working therapeutically with this group of children.

Implemented therapeutic supports: Participant and methodological characteristics, together with explicit details of the therapeutic support, were recorded. Therapeutic supports were grouped according to existing psychotherapeutic frameworks (i.e. cognitive-behavioural, attachment-theory).

Recommendations: Recommendations were synthesised using a deductive thematic analysis framework (Braun & Clarke, 2006; Kiger & Varpio, 2020). Recommendations were summarised in both a tabular and descriptive format, and the number of articles that addressed each theme was recorded. Some articles mapped onto multiple themes and were therefore cited more than once.

Results

The search retrieved a total of 3193 records, with a further eight sourced through manually searching the reference lists of the identified articles. After a process of duplicate removal and two stages of screening, 207 articles underwent full text review, with a total 52 articles being deemed eligible for inclusion. A PRISMA diagram presents the selection process (see Fig. 1). The 52 included articles are summarised in Table 2.

Overview of the Literature

Fifty-two articles described therapeutic supports for children with autism and/or an ID who have encountered interpersonal trauma (see Table 2). Of these, 15 were primary studies that implemented the support directly with this group of children (and/or their parents/caregivers), while the remaining 37 provided a clinical recommendation intended to guide future therapeutic efforts.

Primary Studies that Implemented a Therapeutic Support

Across the 15 studies that implemented a support, there was great diversity in therapeutic modality wherein seven clusters of supports were identified. Table 3 presents these support clusters, participant, and methodological characteristics, together with study findings.

Therapeutic Approaches

Four studies reported on eye movement desensitisation and reprocessing therapy (EMDR), one of which had adjunctive elements that included prolonged exposure and physical activity (Mevissen et al., 2020) and another incorporated a dedicated parenting skills component (Ooms-Evers et al., 2021). Three studies delivered cognitive-behavioural support, namely, manualised Trauma Focused Cognitive Behavioural Therapy (TF-CBT; Holstead and Dalton), the trauma narrative component of TF-CBT in conjunction with family therapy (Gerhardt & Smith, 2020), and nonspecific CBT alongside pharmacological treatment (Lin et al., 2020). A separate study employed an exclusively behavioural intervention that involved highly individualised strategies (i.e., reinforcement, arousal modulation, physical activity, and routine; Kildahl et al., 2021), whereas another implemented a blended behaviour-attachment focussed support that aimed to cultivate sensitive and responsive child-caregiver interactions and increase adaptive behaviour (Sterkenburg et al., 2008). A further two studies delivered established

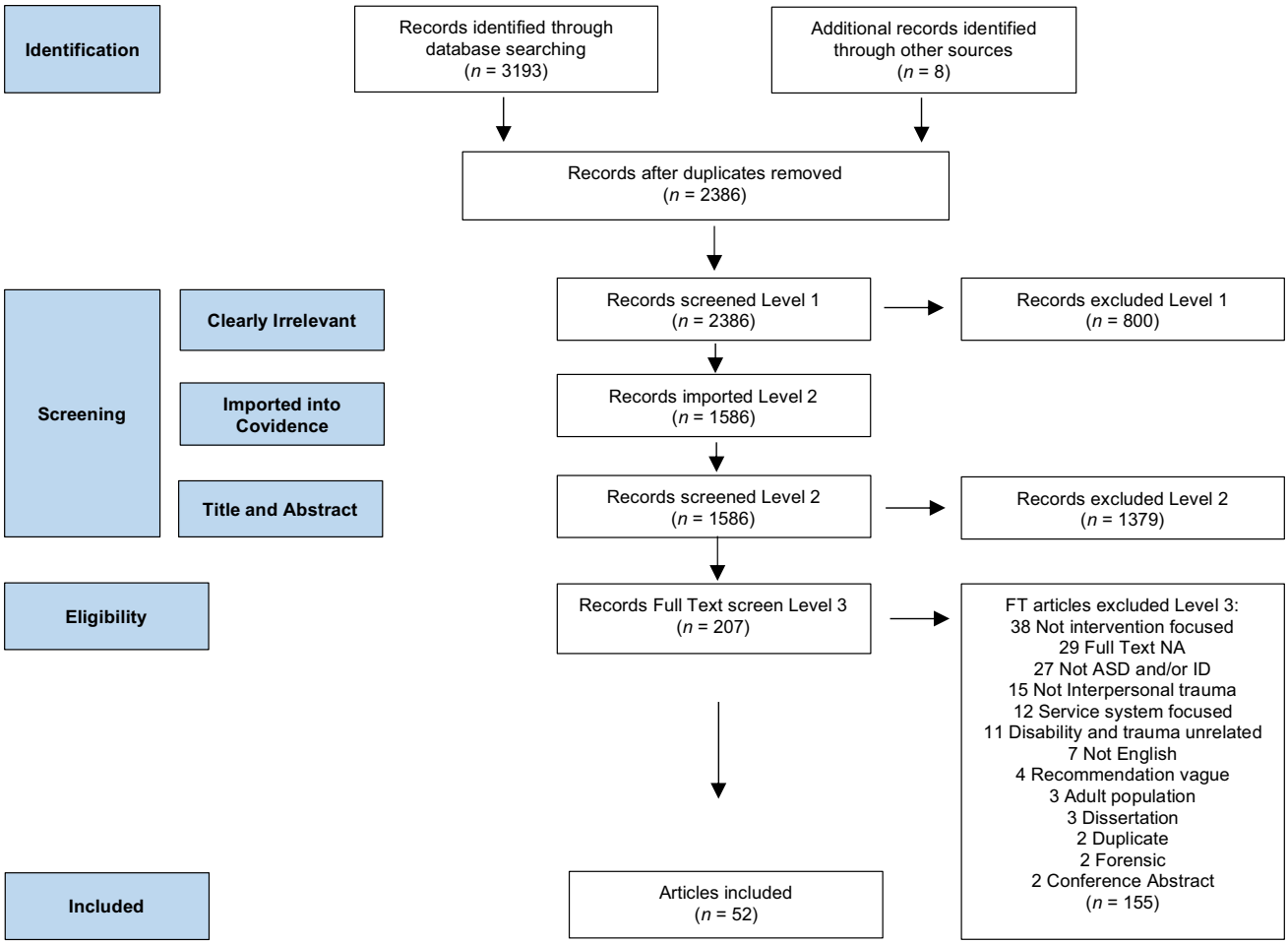

Fig. 1 PRISMA flow diagram of the article selection process

attachment interventions that included child parent psychotherapy (CPP; Harley et al., 2014) and Theraplay (Mohamed & Mkabile, 2015), and two others implemented non-directive therapeutic supports that drew upon art and symbolic play (Guest & Ohrt, 2018; Horovitz, 1981). Finally, the two studies remaining implemented "psychotherapy" without mention of a specific therapeutic modality or support target, both of which mentioned parental involvement (Cook et al., 1993; de Pilar Trelles Thorne et al., 2015).

Participant Characteristics

Across the 15 studies, six reported on participants that had a diagnosis of autism, three on children with an ID, and six on those who had both autism and an ID (see Table 3). Additional presenting difficulties included but were not limited to: post-traumatic stress disorder (PTSD) or subthreshold trauma-based symptomatology, self-injurious behaviour, anxiety, depression, attention deficit-hyperactivity disorder, disrupted attachment, and visual impairments. Interpersonal trauma exposure typically occurred within the family system in all but two studies, and nine studies involved parents/caregivers in the intervention process.

Methodological Characteristics

The 15 studies consisted of four case series, eight case reports, a repeated measures study, and a nonrandomised trial (see Table 3). Twelve of the studies described the therapeutic support in replicable detail by citing a treatment manual or by providing explicit details about the nature of the therapeutic support. The remaining three provided a reference to a support modality and/or alluded to an intervention component but did not elaborate. Eight of the studies specified their target outcomes from the outset (i.e., as part of their methodology), and similarly, eight studies utilised standardised assessment instruments to operationalise their target outcomes and collect data on their participants. Instruments varied in focus and assessed for trauma-based symptomatology, daily life impairment,

Table 2 List of included articles

#	First author	Article category	Article type	Aim[a]
1	Algood et al., 2011	Recommendation	Review	Understand the risk factors for maltreatment of children with DD[b]
2	Allington-Smith et al., 2002	Recommendation	Commentary	Not explicitly stated but author writes: "evidence is emerging on the treatment of 'normal' children, and it is to that literature that one must look to find treatments that can then be adapted to individual who has a learning disability."
3	Byrne, 2020	Recommendation	Systematic review	Appraise the effectiveness of CBT and EMDR for PTSD and associated symptoms for both adults and children with mild, moderate, or severe intellectual delay
4	Chan & Lam, 2016	Recommendation	Empirical	Examine risk factors for harsh discipline among parents of children with autism, examine the link between psychological aggression and physical assault
5	Cook et al., 1993	Implementation	Case study	Not explicitly stated by authors report: "the following case illustrates an early adolescent boy with autistic disorder who developed PTSD after being physically abused in a residential treatment facility."
6	Dion et al., 2013	Recommendation	Review	Provide an overview of sexual abuse of intellectually disabled youth and discuss the implications for prevention and intervention
7	Dodds, 2021	Recommendation	Scoping review	Explore the current literature reporting on the intersection of ACEs or traumatic experiences and autism, synthesise key findings; to make suggestions for future research; to provide provisional service recommendations
8	Duan et al., 2015	Recommendation	Empirical	Investigate the frequency of CPM in children with autism and explore the risk factors for severe CPM
9	Fang et al., 2022a	Recommendation	Systematic review	Assess the effectiveness of parenting interventions for families of children with DD in reducing the incidence of physical abuse, decreasing children's emotional and behavioural problems, and improving parent–child relationship
10	Gardiner et al., 2017	Recommendation	Review	Establish an innovative framework to guide the development of programs for the assessment and treatment of dually diagnosed youth
11	Gerhardt & Smith, 2020	Implementation	Case study	Explore how the narrative component of TF-CBT was adapted using a video game called Minecraft to provide a structure for an 11-year-old boy with ASD and a history of abuse and neglect
12	Ghosh-Ippen et al., 2014	Recommendation	Commentary	Highlight interventions that address core CPP goals and discuss the need to address four key topic areas when conducting CPP with children with disabilities
13	Grosso, 2012	Recommendation	Book chapter	Not explicitly stated but authors report: "the applications presented in this chapter are a result of the implementing TF-CBT with children and adolescents with complex trauma and psychopathology. Of these children, many also suffered from various DD."
14	Guest & Ohrt, 2018	Implementation	Case study	Illustrate an adapted child-centred play therapy approach for children on the spectrum who have also endured trauma
15	Gupta, 2019	Recommendation	Book chapter	Briefly review the available literature on sexual abuse in children and adults with ID, discuss preventive, supportive, and intervention strategies for clinical practice
16	Hall-Lande et al., 2015	Recommendation	Empirical	Provide information about children with autism who are involved in CPS
17	Harley et al., 2014	Implementation	Case series	Investigate the application of the CPP model for young children with DD who were exposed to trauma
18	Holstead & Dalton, 2013	Implementation	Empirical	Determine if manualised TF-CBT was as effective as more traditional ABA approaches with individualised IBI for youth with developmental conditions

Table 2 (continued)

#	First author	Article category	Article type	Aim[a]
19	Hoover & Kaufman, 2018	Recommendation	Review	Review recent studies examining the rates of bullying, ACEs, reports of maltreatment among children with autism, and issues of differential diagnosis with reactive attachment disorder and suggest future directions in the assessment and treatment of children with autism exposed to trauma and other childhood adversities
20	Horovitz, 1981	Implementation	Case study	Not explicitly stated but authors report: "it was thought that art therapy might develop an improved self-image and provide him with an arena for successful experiences through symbolic expression via the art."
21	Jahng, 2020	Recommendation	Empirical	Examine the moderating effect of maternal parenting self-efficacy on the relationship between mothers' childhood abuse experience and their abuse of their children with DDs
22	Kildahl et al., 2021	Implementation	Case study	Explore and describe the inpatient psychiatric assessment in an adolescent male with ASD, severe ID, and SIB who was diagnosed with a co-occurring anxiety disorder
23	King & Desaulnier, 2011	Recommendation	Commentary	Discuss practice-based evidence regarding the treatment of cPTSD in neurotypical individuals and summarise evidence-based suggestions for the modification of CBT in individuals with ID
24	Lin et al., 2020	Implementation	Case study	To report one case to highlight clinical wisdom
25	MaClean et al., 2017	Recommendation	Empirical	Report the prevalence of different disabilities within the child protection system in an Australian state and assess risk of maltreatment in various types of disability
26	Mansell et al., 1996	Recommendation	Commentary	Discuss considerations and strategies for therapy adaptations to meet the special needs of sexually abused young people with DD
27	McCarthy, 2001	Recommendation	Commentary	Outline the theoretical understanding of PTSD, which may be relevant to the field of learning disability and then consider clinical assessment and treatment
28	Mevissen et al., 2011	Implementation	Case series	Investigate the applicability of an evidence-based treatment for PTSD (i.e., EMDR) in four people with mild ID and suffering from PTSD following various kinds of trauma
29	Mevissen et al., 2016	Recommendation	Commentary	Provide an overview of the literature on the manifestations and assessment of PTSD in people with ID and treatment of PTSD symptoms in people with ID
30	Mevissen et al., 2017	Implementation	Case series	Explore the effectiveness of EMDR therapy for PTSD in persons with MBID using a multiple baseline across subject's design
31	Mevissen et al., 2020	Implementation	Case series	Evaluate the feasibility and potential effectiveness of "KINGS-ID," a 6-week clinical trauma-focussed treatment program consisting of intensive EMDR therapy with parents and children and parental skills training followed by 2 weeks of parent support at home
32	Mohamed & Mkabile, 2015	Implementation	Case study	Explore the case of a 13-year-old girl with moderate intellectual disability and severe and persistent externalising behavioural difficulties
33	Morgart et al., 2021	Recommendation	Commentary	Present an overview of the long-term consequences of ACEs and the underlying mechanisms with attention to children with DD
34	Ooms-Evers et al., 2021	Implementation	Empirical	Investigate feasibility, safety, and potential effectiveness of an intensive clinical trauma treatment in children and adolescents with MBID and trauma-related symptoms as a result of ACEs or PTSD
35	Paquette et al., 2018	Recommendation	Empirical	Identify characteristics of maltreated children with ID that differ from those of other maltreated children

Table 2 (continued)

#	First author	Article category	Article type	Aim[a]
36	Peterson et al., 2019	Recommendation	Commentary	Provide preliminary recommendations for adapting current evidenced-based, trauma-specific interventions, for individuals with autism
37	Romney & Garcia, 2021	Recommendation	Commentary	Present an adaption to TF-CBT to guide the therapist in using this model on children diagnosed with autism and conducting therapy via teletherapy
38	Rose & Hardman, 1981	Recommendation	Review	Review the literature on the relationship of child abuse to mental retardation
39	Rumball, 2019	Recommendation	Systematic review	Provide a review of the assessment and treatment of PTSD in individuals with autism
40	Schneider et al., 2019	Recommendation	Empirical	Examine differences in ACEs among children with autism and/or ADHD and healthy controls
41	Schuengel et al., 2013	Recommendation	Review	Report on possible clinical implications for assessment, prevention, intervention, and education
42	Shabalala & Jasson, 2011	Recommendation	Empirical	Explore the presence of PTSD in a group of intellectually disabled victims of sexual abuse
43	Shannon & Tappan, 2011	Recommendation	Empirical	Examine CPS practice with children with DD
44	Stack & Lucyshyn, 2019	Recommendation	Review	Provide an overview of the treatment of trauma in typically developing children and suggest a modified treatment model for working with trauma in children with autism
45	Sterkenburg et al., 2008	Implementation	Empirical	Investigate a combination of an attachment-based therapy and behaviour modification for children with persistent challenging behaviour
46	Strickler, 2001	Recommendation	Commentary	Review what is known about the relationship between family violence and mental retardation
47	Sullivan, 1993	Recommendation	Commentary	Address the special psychotherapeutic needs of handicapped children
48	Tharinger et al., 1990	Recommendation	Commentary	Not explicitly stated but authors report: "to work effectively with children and adults with ID who are victims of sexual abuse…professionals need to become educated about the rights of these persons to special legal protection from abuse and neglect and to appropriate and effective mental health interventions."
49	de Pilar Trelles Thorne et al., 2015	Implementation	Case study	Not explicitly stated but authors report: "M.'s case illustrates a complex interface between ASD and traumatic life events."
50	Vervoort-Schel et al., 2021	Recommendation	Empirical	Investigate the presence of ACEs and family context risk variables in children with ID/BIF in residential care
51	Weiss & Lunsky, 2011	Recommendation	Empirical	Examine the interaction between intellectual functioning and attachment style in predicting romantic relationship violence in maltreated youth
52	Wissink et al., 2015	Recommendation	Review	Provide a review of the literature on sexual abuse involving children with ID

[a]Aims were extracted from the original article

[b]List of abbreviations. *DD*, developmental disabilities; *CBT*, cognitive behavioural therapy; *EMDR*, eye movement desensitisation and reprocessing; *PTSD*, post-traumatic stress disorder; *CPM*, child physical maltreatment; *TF-CBT*, trauma focussed cognitive behavioural therapy; *ASD*, autism spectrum disorder; *CPP*, child parent psychotherapy; *ABA*, applied behaviour analysis; *IBI*, intensive behavioural intervention; *ID*, intellectual disability; *ACEs*, adverse childhood experiences; *SIB*, self-injurious behaviour; *cPTSD*, complex post-traumatic stress disorder; *MBID*—mild to borderline intellectual disability; *ADHD*, attention deficit hyperactivity disorder; *BIF*, borderline intellectual functioning

broad mental health and behavioural outcomes, parental stress, and psychopathology. The seven studies remaining collected information on their participants via unstandardised parental report and/or clinical observation.

Only seven studies evaluated the efficacy of their therapeutic support by comparing standardised assessment data pre-to post-intervention. Three plotted their data graphically and/or in tabular form to visually inspect the data for trends,

Table 3 Characteristics of studies that implemented a therapeutic support

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
30	EMDR	Mild ID	PTSD, behaviours that challenge	Intrafamilial	Case series	1	—[b]	X	X	PTSD symptoms	Adapted ADIS-Clinical Interview—PTSD section	Graphical	Number of PTSD symptoms decreased
31	EMDR	Mild-borderline ID, Autism	PTSD	Likely intrafamilial	Case series	19	X	X	X	PTSD symptoms; daily life impairment; general mental health; parental stress	Diagnostic Interview Trauma and Stressors – Intellectual Disability (DITS-ID); SCL-90; Opvoedingsbelastingvragenlijst (Parental stress questionnaire; OBVL)	Statistical	Child and parent PTSD symptoms and daily life impairment decreased; parents' general psychopathology and parenting stress decreased
34	EMDR	Mild-borderline ID, Autism	PTSD	Likely intrafamilial	Repeated measures study	33	X	X	X	PTSD symptoms; daily life impairment; emotional and behavioural problems	DITS-ID; Strengths and Difficulties Questionnaire (SDQ)	Statistical	Decrease in PTSD symptoms, emotional and behavioural problems, and daily life impairment

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
28	EMDR	Mild ID, Autism	Complex developmental Disorder, obsessive–compulsive symptomatology, marked fears, psychotic phenomena, behaviours that challenge	Intrafamilial	Case series	1	—	X	—	Psychotic phenomena; fear; obsessive compulsive symptoms; challenging behaviour; autism symptoms	Parent/caregiver report	—	—
18	TF-CBT	Mild ID, Autism	PTSD or trauma-related symptomatology	Likely intrafamilial	Non-randomised trial	88	X[c]	X	X	Internalising and externalising behaviours	Teacher Report Form of the Achenbach System of Empirically Based Assessment (ASEBA)	Statistical	Decrease in behaviours across all seven subscales for control group; decrease across two subscales (aggressive behaviour and rule breaking) for active treatment group

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
11	TF-CBT	Autism	ADHD, anxiety, depression, unspecified trauma-disorder, disrupted attachment	Intrafamilial	Case report	1	X	X	__	Perseveration on traumatic events; depression symptom; self-blame	Patient Health Questionnaire for Adolescents (PHQ-A); Parent report	__	__
24	CBT	Autism -Asperger's	PTSD, depression, behaviours that challenge	Intrafamilial	Case report	1	__	__	__	Anxiety; sleep; challenging behaviour	Parent report	__	__

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
22	Behavioural	Autism, ID	Self-injurious and behaviours that challenge	Extrafamilial	Case report	1	—	X	X	Self-injurious behaviour; psychiatric symptoms; behaviours that challenge; general behaviour; language; participation and engagement outcomes	The Diagnostic Assessment of the Severely Handicapped–II (DASH-II), The Psychopathology in Autism Checklist; Aberrant Behavior Checklist (ABC); Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (Kiddie-SADS); Caregiver observations	Statistical	Decreased frequency of self-injurious behaviour; reduced scores on psychosis, anxiety, obsessive–compulsive, general adjustment problems and behaviour subscales; able to participate in previous activities

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
45	Behavioural attachment	Severe ID	Self-injurious and behaviours that challenge, visual impairments	Intrafamilial	Case series	6	X	X	X	Challenging and adaptive behaviour	Severe Challenging Behaviour Consensus Protocol – National Institute for Health Care Management (CEP); Challenging Behaviour Scale for People with an Intellectual Disability; Clinical observation frequency recording (frequency of behaviours)	Statistical	Decrease in frequency of behaviours that challenge; replacement behaviours learned more easily from therapists with attachment relationship
32	Attachment	Moderate ID	Behaviours that challenge	Intrafamilial	Case report	1	X	X	X	Behaviours that challenge; attachment relationship; parenting skills	Parent report	__	__

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
17	Attachment	Autism (autistic disorder)	Disruptive behaviour disorder	Intrafamilial	Case report	1	X	X	X	Parental adjustment to child's disability; parental stress; parent–child interactions; parenting skills; PTSD symptoms; behaviours that challenge; autism symptomatology	Traumatic Events Screening Inventory (TESI-PRR); Life Stressor Checklist-Revised; Family Impact of Childhood Disability Scale (FICD); Parenting Stress Index (PSI); Trauma Symptom Checklist for Young Children (TSCYC); Clinical observation; Parent report	Tabular	Decrease in PTSD symptoms however avoidance subscale remained elevated; parent endorsed some improved symptoms yet high scores on "parent–child dysfunctional interaction" and "difficult child" subscales remained Child no longer met criteria for Disruptive behaviour disorder or PTSD
14	Non-directive	Autism	ADHD, aggressive behaviour	Intrafamilial	Case report	1	X	X	—	Socio-emotional skills; nightmares; fear; behaviours that challenge;	Clinical observation	—	—

Table 3 (continued)

#[a]	Support type	Autism and/or an ID	Comorbidity	Trauma exposure	Study design	Participants (*n*)	Parent or caregiver involved	Support described in replicable detail	Outcomes specified a-priori	Outcomes	Assessment measures	Type of efficacy analysis	Results of analysis
20	Non-directive	Autism (infantile autism)	Poor self-image, low frustration tolerance	Intrafamilial	Case report	1	—	X	—	Cognitive and socio-emotional skills; self-esteem; fear; attachment	Clinical observation	—	—
49	Psychotherapy	Autism, borderline ID	ADHD, PTSD, aggressive behaviour	Intrafamilial	Case report	1	X	—	—	Behaviours that challenge	Clinical observation	—	—
5	Psychotherapy	Autism (autistic disorder)	PTSD	Extrafamilial	Case report	1	X	—	—	Anxiety; PTSD symptomatology	Clinical observation	—	—

[a]Numerical items refer to articles listing each recommendation as numbered in Table 2

[b]A dash was used to denote the absence of a particular methodological feature while an "X" was used to indicate its presence

[c]Not explicitly stated but TF-CBT involves a parent component (Cohen et al., 2006)

while four utilised formal statistical analysis techniques as their primary analysis method. These seven studies spanned five therapeutic support clusters (i.e., EMDR, TF-CBT, behavioural, behavioural-attachment, and attachment). The remaining eight studies described participants' characteristics after implementation but, without baseline data, were unable to evaluate efficacy of the therapeutic support.

Findings of Studies that Evaluated Efficacy

Of the seven studies that assessed efficacy, reductions in post-traumatic symptomatology, general psychiatric challenges, behavioural difficulties and daily life impairment were reported. Two studies reported improved parent outcomes (Harley et al., 2014; Mevissen et al., 2020); however, in one study, scores on the majority of parental stress subscales remained elevated post intervention (Harley et al., 2014). Of note, the results of one study indicated that their TF-CBT intervention was largely ineffective in reducing internalising and externalising problems in children; however, aggressive behaviour and rule-breaking did decrease (Holstead & Dalton, 2013).

Method of Delivery

Eight of the studies that implemented a therapeutic support used nonverbal, sensory, and/or play-based therapeutic techniques (Guest & Ohrt, 2018; Harley et al., 2014; Horovitz, 1981; Kildahl et al., 2021; Mevissen et al., 2011, 2017, 2020; Mohamed & Mkabile, 2015), and an additional study made an explicit attempt to integrate their participant's interests and preferred activities into the intervention process (Gerhardt & Smith, 2020). Efforts to modify language and match the communication abilities of participants were reported across five studies, which included the provision of clear instructions (Mevissen et al., 2011, 2017, 2020), simplified communication (Guest & Ohrt, 2018; Ooms-Evers et al., 2021), and the use of positive language (Harley et al., 2014). A further study emphasised the importance of reinforcing and validating verbal communication attempts (Kildahl et al., 2021). Finally, structural modifications to sessions were noted across a small number of studies and included ensuring predictability (Sterkenburg et al., 2008), slowing down the pace of sessions (Guest & Ohrt, 2018), prioritising one task at a time (Mevissen et al., 2020), and providing frequent breaks (Harley et al., 2014).

A Synthesis of Recommendations

Article Characteristics

The 37 articles that made a recommendation for working therapeutically with this group of children comprised two book chapters, 12 reviews, and 12 commentaries, with a small proportion ($n = 11$) being primary and secondary studies (see Table 2). As demonstrated in Table 2, the primary objective of a large portion ($n = 23$) of these articles was to provide recommendations, whereas the recommendations made by the remaining 14 were a subsidiary of a separate yet related research endeavour.

A visual inspection of these articles' reference lists revealed that only nine of the 15 studies that implemented a therapeutic support were cited (Cook et al., 1993; Harley et al., 2014; Holstead & Dalton, 2013, Mevissen et al., 2011, 2017, 2020; Mohamed & Mkabile, 2015; Sterkenburg et al., 2008; De Pillar Trelles Thorne et al., 2015). The remaining citations were comprised of commentaries, opinion pieces and reviews, or primary studies that reported on therapeutic supports for adults with a history of childhood trauma, neurodiverse children who had not encountered trauma, and children who had experienced trauma but did not have an identified neurodevelopmental diagnosis.

Thematic analysis of the 37 articles revealed two distinct clusters of recommendations: child-focussed and parent/caregiver-focussed. Four different categories of therapeutic support were identified within each cluster, which are summarised below and detailed in Table 4.

Child Focussed

Seventeen articles recommended that children be assisted with their emotional literacy and/or adaptive emotional regulation, wherein explicit strategies like mindfulness and progressive muscle relaxation were frequently mentioned. Eighteen articles indicated that behavioural targets should be, at least in part, the focus of therapeutic support efforts, with a large portion advocating for education about safety skills, intimacy, and interpersonal relationships. Fourteen articles made a recommendation that centred on modifying children's thinking patterns, with many advising that clinicians should address children's cognitive distortions, support children to construct an accurate trauma narrative, and provide psychoeducation about trauma. Finally, twelve suggested general psychotherapeutic approaches (e.g. CBT, EMDR, and counselling); however the majority of these did not elaborate on a specific therapeutic target.

Parent/Caregiver Focussed

Twenty-four articles recommended that parents/caregivers be part of the therapeutic work with this group of children. Eight of these articles did not specify what such involvement would entail (Byrne 2020; Dion et al., 2013; Mansell et al., 1996; Rose & Hardman, 1981; Schneider et al., 2019; Sullivan, 1993; Tharinger et al., 1990; Vervoort-Schel et al., 2021); however, fourteen emphasised that parents may

Table 4 Recommendations classified by theme

Therapeutic support type	Recommendation	Article #[a]
Child-centred therapeutic supports		
General recommendations	• Cognitive behavioural therapy	3, 10, 13, 15, 23, 46
	- Specifically: trauma-focused cognitive behavioural therapy	15, 19, 33, 37
	• Psychotherapy and/or counselling	26, 27, 48
	• EMDR	3, 10, 29
Emotion-focused	• Improve emotional regulation and expression	2, 6, 7, 12, 13, 23, 36, 37, 38, 44, 46, 47, 48, 50
	• Support the child with labelling and describing their feelings and expand their affective vocabulary	6, 23, 26, 36, 37, 44, 47
	• Teach relaxation strategies (with and without sensory elements)	2, 12, 13, 15, 33, 36, 37, 44, 46
	- Specifically: mindfulness; biofeedback; meditation; guided imagery; progressive muscle relaxation; deep breathing exercises; dimming lights; weighted blanket; music; grounding techniques like balloon breathing	13, 15, 23, 37, 44
	• Develop adaptive/problem-focused coping skills	13, 23, 26, 33, 36
	- Specifically: developing an ability to endure distress and uncomfortable physiological responses associated with trauma instead of avoidance	13, 23
	• Understand and identify emotions and internal physiological cues	2, 6, 13, 23, 26, 37, 38
	• Talk about abuse and the associated emotional consequences	15
	• Promote emotional regulation to help with narrative and exposure work, and with processing traumatic memories	13, 23, 36
Behaviourally focused	• Educate and engage in skills practice regarding social interaction, social skills, relationships, intimacy, and communication	2, 6, 15, 26, 43, 46, 47
	• Develop safety skills and provide self-defence training	2, 6, 13, 26, 35, 36, 37, 43, 44, 46, 47, 52
	- Specifically: teach about safe and unsafe people, behaviours, and situations; inappropriate behaviours; ok-not-ok touch; who should one share their thoughts and feelings with	13, 26, 36, 37, 44
	• Deliver assertiveness training	2, 6, 15, 26
	• Provide sexual education (which includes recognising sexual abuse, how to communicate abuse, and to whom)	2, 6, 15, 26, 43, 47, 48
	• Manage behaviour	2, 6, 8, 15, 16, 44, 47
	- Specifically: treat behavioural characteristics that emerge because of the abuse	44, 47
	• Establish routine	15
	• Engage in exposure exercises	13, 23, 36, 37, 44, 47
	• Develop a safety plan with the child	44, 46
Cognitively focused	• Provide psychoeducation to enhance the child's understanding of trauma and post-traumatic reactions	2, 13, 23, 36, 37, 44, 46, 47
	• Assist the child with identifying their triggers, maladaptive cognitions, and cognitive distortions	23, 36, 44, 46, 47
	- Specifically target: cognitions around sexualisation, powerlessness, betrayal, stigmatisation, being 'damaged goods,' guilt, blame, fear, embarrassment, humiliation	2, 13, 23, 47
	• Support the child to regain their ability to trust	47
	• Encourage the child to recreate and share their trauma narrative	13, 23, 36, 44
	• Promote resolution regarding the child's appraisals about themselves and the word	23

Table 4 (continued)

Therapeutic support type	Recommendation	Article #[a]
	• Enhance the child's resilience, self-efficacy, self-esteem, and confidence	23, 33, 38, 46, 48
	• Teach cognitive coping and problem-solving skills	13, 36, 37, 44, 46
	• Educate children about the cognitive triad	13, 37, 44
	• Support the child with regaining control over their life	48
Parent/caregiver-centred therapeutic supports		
Parent/caregiver as client	• Reduce parental stress	1, 4, 7, 9, 16, 43
	• Provide mental health/psychological support	4, 16
	• Increase parental social support	1, 4, 7, 35, 43
	• Enhance parents' adaptive coping skills	1, 4, 8, 21
	• Manage parents' cognitive distortions related to their child's trauma	2, 4, 13, 15, 37
	- Specifically target: guilt, blame and fear of judgement	15, 37
	• Manage parents' own history of trauma	12, 21
	• Provide respite care to parents	4, 16, 25
	• Increase parental self-efficacy and confidence in parenting abilities	21
	• Promote acceptance of the child's trauma	2, 15
	• Manage parents' emotional reaction to the traumatic event	13, 27
Parenting/caregiver skills	• Make the child feel safe and reassure them that the traumatic event(s) wasn't their fault	2, 33
	• Normalise the child's trauma response	13
	• Attune to and address the child's needs	2, 36
	• Communicate with the child about interpersonal trauma	2
	• Promote behavioural management skills	2, 4, 13, 16, 21, 25, 36, 43
	- Specifically: positive behaviour support selective attention, time-outs, praise, and reinforcement	13, 16, 37, 43
	• Acquire additional parenting techniques	1, 7, 9, 21, 35, 36, 37, 44
	• Understand the child's symptoms, triggers, and coping skills	36
	• Create an exposure hierarchy together, plan and review exposure homework	44
	• Help parents to create schedules and routines	13
	• Teach children about appropriate physical contact	15
Parent/caregiver psychoeducation	• Educate parents on trauma and its impact on children's mental health and behaviour	15, 27, 33, 44, 37, 42
	• Educate maltreating parents on the fact that harsh parenting practices will not change their child	8
	• Educate parents about the unique needs of children with disabilities and what is and isn't within their child's control	4, 21, 35
	• Educate parents about children's need for structure, routine, repetition, and reinforcement	13
	• Educate parents on the extent to which their behaviour impacts their child	37, 44
Attachment-focused	• Target the parent-child relationship	1
	• Implement attachment-informed interventions	2, 7, 10, 41, 51
	- Specifically: child-parent psychotherapy	7, 12, 51
	• Promote secure parent-child relationships characterised by safety and security	10
Therapeutic support delivery		
Therapeutic techniques	• Role play	2, 6, 10, 23, 26, 36, 47

Table 4 (continued)

Therapeutic support type	Recommendation	Article #[a]
	• Projective storytelling, symbolic play, expressive art materials, drama, puppets, books, videos, humour, pictures, toys, games, drawings, cartoons, figurines, sand play, dollhouses	2, 6, 10, 13, 15, 23, 26, 36, 37, 47, 48
	• Create a sensory toolkit	23, 36, 37
	• Create a physical safety bubble to indicate boundaries and personal space	13
	• When talking about the cognitive triad, physically move around the room to stations using a baseball game analogy	13, 37, 47
	• Utilise visual timers, visual activity schedules, gradient scales, story boards, index card trauma timeline	13, 23, 36, 37, 44, 47
	• Create a visual prompt of safe people to communicate too	44
	• Use social stories	13, 36, 37, 44
	• Engage in preferred activities with tangible reinforcements	36
	• Engage in client's areas of interest	23, 36, 37, 44
Language	• Use simplified language	2, 6, 26, 35, 36, 37, 39, 44
	• Focus on concrete not metaphorical language	26, 36, 37
	• Ask open-ended questions	36, 39, 46
	• Use repetition	6, 26, 35, 36, 37, 44, 46
	• Implement rule-based teaching (ie, first-then type instructions)	26, 36, 37, 46
	• Use augmentative/alternative communication methods (ie, picture-exchange systems, speech-generating devices, sign language, iPads, computers)	36
	• Learn the child's individual communication and interaction style	36
	• Allow more time for the child to answer	6
Session content and structure	• Increase predictability and sameness	23
	• Allow various seating arrangements	23
	• Increase session dosage	23, 44
	• Warn the child before transitioning	36, 37
	• Provide ample breaks	36
	• Slow down the pace of sessions	37, 39
	• Shorten sessions	23, 35, 37, 44
	• Group sessions over individual sessions to offer support and validation from shared experiences	26, 48
	• Provide opportunities for generalisation outside of the session room across multiple contexts	26, 36, 47
	• Scaffold content	36
	• Slowly introduce emotionally laden topics	23
	• If behavioural management is required utilise strategies such as modelling, feedback, positive reinforcement, shaping, token economies	6, 26, 36, 44, 47

[a]Numerical items refer to the specific articles that listed each recommendation as numbered in Table 2

require individual support with their own challenges. Ten articles advocated for parent psychoeducation, with the most common suggestion being that parents should be educated about trauma and its widespread effects, the unique needs of neurodiverse children, what is and is not within their child's control, and that harsh discipline will. Additionally, thirteen articles recommended that parents be taught specific, practical skills to assist them in their parenting role

(i.e. how to attune to their child's needs and engage in emotion-focussed conversations about trauma), and separately, seven recommended that therapeutic support should focus on parent–child attachment with child-parent psychotherapy emerging as a recurrent suggestion (Lieberman et al., 2005).

Recommended Methods of Delivery

Twelve articles recommended that interactive, creative, play-based, and sensory tools be utilised when supporting children in a therapeutic capacity (e.g., role plays, art, drama, and social stories). The utilisation of visual and pictorial strategies was explicitly recommended by six articles and included the use of visual timers, visual activity schedules, story boards, and index cards. Nine articles recommended that clinicians should modify their language to meet the needs of this group of children, while, similarly, nine articles suggested that adaptations be made to session structure and content. Specific recommendations centred on ensuring predictability, shortening the length of sessions, providing ample breaks, and slowly introducing emotionally laden topics.

Discussion

To date, there has been a lack of clarity regarding what constitutes best therapeutic practice for children with autism and/or an ID who have a history of interpersonal trauma. To form a more coherent picture of this clinical domain, the current review identified studies that have implemented a therapeutic support with this group of children and synthesised clinical practice recommendations intended to guide future support endeavours.

Paradoxically, despite their high-risk status, only 15 studies were identified that implemented a therapeutic support with our population of interest. Across these studies, seven main types of therapeutic approaches emerged, which were marked by diverse participant characteristics and methodologies that varied in terms of their study design, target outcomes, the operationalisation of variables, and use of efficacy analyses. Unfortunately, the sheer paucity of primary studies in this body of literature and the significant participant and methodological heterogeneity observed limited even preliminary empirical assertions from being made in this review. As such, the extent to which one therapeutic support modality may have more "clinical promise" or "best practice potential" over another could not be reliably determined.

That said, a noteworthy discovery was that the types of therapeutic support implemented largely parallel first-line evidence-based treatments recommended by the National Institute for Health and Care Excellence (NICE) for children in the general population who have experienced interpersonal trauma. These include TF-CBT, attachment-based therapies, CPP, and EMDR (NICE, 2017, 2018). While further research is needed to develop an empirical approach to supporting the mental health of neurodiverse children with a history of interpersonal trauma, it is reassuring that several of the implementation studies drew upon existing therapies that are both scientifically grounded and widely endorsed within the general population.

Another interesting pattern to emerge across implementation studies was that few had an exclusively verbal emphasis and/or demanded a high cognitive load. This pattern further traversed the clinical practice recommendations wherein therapeutic support with a behavioural focus and/or an emotional target garnered the highest number of recommendations. While it is a common misconception that children with autism and/or an ID are unable to benefit from talk-based therapies (Gaus, 2007; Weston et al., 2016), future research may benefit from comparing the relative effectiveness of purist cognitive modalities, over other more behavioural and/or emotion-focussed therapeutic approaches when supporting this group of children.

Of note, recommendations that were behaviourally focussed centred on enhancing children's communication skills and providing education on interpersonal relationships, safety, and abuse. This aligns with converging evidence demonstrating that a lack of skills and/or knowledge in these areas is significant risk factor for interpersonal trauma exposure in children with autism and/or an ID (Miller et al., 2017) and is core component of primary, secondary, and tertiary prevention programs for neurotypical children who have encountered similar traumatic experiences (Kim, 2010). With respect to the emotionally anchored recommendations, it was repeatedly suggested that children's emotional vocabulary and regulation be the focus of therapeutic support efforts. Indeed, given that these emotional domains already prove challenging for neurodiverse children and are often amplified following interpersonal trauma exposure, it is unsurprising that recommendations of this nature repeatedly surfaced (Haruvi-Lamdan et al., 2018; Hill et al., 2004; Mazefsky et al., 2013; McClure et al., 2009; Rieffe et al., 2007).

Despite the consistency observed, the clinical practice recommendations did not appear to explicitly favour one particular type of therapeutic support over another. This could simply suggest that there is no "one size fits all" approach to working with this group of children. More likely however, is that in the absence of a substantial and robust evidence base wherein the majority of recommendations were not empirically supported, there exists considerable variation across clinical and research opinion. As such, the recommendations detailed in this review must be viewed as potential signposts for future clinical research but not as definitive evidence of

what therapeutic supports should be implemented with this population.

Perhaps of greatest clinical utility was the discovery that the bulk of the literature presented in this review indicated that parents/caregivers be involved in the therapeutic work. While historically research tended to over-emphasise characteristics of the individual child in the attribution of interpersonal trauma vulnerability (Manders & Stoneman, 2009; Thomas-Skaf & Jenney, 2021), the findings of this review reinforce ecological risk models demonstrating the role of the systemic context in this complex clinical picture (Algood et al., 2011). Whether parents/caregivers are instigators of harm, inadvertent contributors, or are unclear about how to respond to their child's traumatic encounter, a systems-approach to therapy is widely acknowledged as fundamental to harm reduction and therapeutic success in this group.

An ancillary discovery was that the methods of intervention delivery endorsed across the literature were consistent with those that have been well-defined in the broader neurodevelopmental literature (Spain & Happé, 2020; Surley & Dagnan, 2019). While this could suggest that therapeutic modifications for children with autism and/or an ID are homogenous irrespective of whether the child has experienced interpersonal trauma or not, this supposition has yet to be formally tested.

There were some limitations in the present study that should also be considered. First, despite employing a rigorous and systematic literature search with a diversity of terms, as well as a manual search of the reference list of all included articles, it is possible that not all studies of relevance were captured. Further, the frequency with which similar recommendations emerged is not necessarily a proxy of their relative significance. While it is hoped that a degree of intentionality underscored the provision of each recommendation, authors may have respectfully echoed recommendations of relevance in a somewhat perfunctory manner. It is, however, plausible that recommendations with high frequency counts do reflect areas of priority in the field and certainly provide possible avenues for exploration. Finally, as the literature on therapeutic supports for this group had yet to be sufficiently integrated, a systematic review with a comprehensive quality appraisal was deemed premature. That said, given that the primary objective of this review was to map and synthesise the "current state of affairs" in this clinical space, we were able to capture nuanced information that would have been lost had a systematic review been conducted instead.

In conclusion, this review highlights that the literature on therapeutic supports for children with autism and/or an ID and a history of interpersonal trauma is scant, diffuse, and largely lacking in methodological consistency. While there is clearly an absence of evidence to guide best practice, the emphasis on parent/caregiver involvement and the ever-so-slight shift away from verbal and/or cognitively demanding modalities make important progress toward understanding potential therapeutic support models for this group of children. Ultimately, it is hoped that this timely synthesis will incentivise researchers to work alongside families and clinicians to develop and systematically evaluate potential therapeutic supports for this vulnerable population, and that an empirical consensus will materialise in the not-too-distant future.

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Declarations

Conflict of Interest The authors declare no competing interests.

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