A Rapid Evidence Assessment on the Effectiveness of Interventions for Autistic Adolescents with Harmful Sexual Behaviours

Institute of Child Protection Studies Australian Catholic University 2024



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# **Executive Summary**

The management of harmful sexual behaviours (HSBs) in adolescents with an Autism Spectrum Condition (ASC) is a complex and critical area of research and clinical practice. This summary synthesizes the findings from various studies identified in this rapid evidence assessment (REA) and highlights the importance of a comprehensive approach to addressing these challenges.

The studies included in this review provided evidence for a range of interventions, including pharmacological treatments, cognitive-behavioural therapy, and other psychotherapeutic approaches. The findings, however, are to be interpreted with caution as the overall quality of the included studies was assessed to be low, with most studies rated at the lowest level for appropriateness and scored poorly in quality. Just one study (Visser et al., 2017), a randomized control trial, scored highly.

We suggest that the literature is not robust enough to indicate a promising evidence-based approach for interventions for autistic adolescents who are at risk of or who display and engage in HSBs, and the findings are not transferable to practice. Additional research is required to better prepare healthcare professionals for addressing HSBs in autistic young people.

### Key Findings:

Cognitive-behavioural therapy (CBT) has demonstrated effectiveness in treating both problematic sexual behaviours and HSBs in autistic individuals by addressing maladaptive thoughts and behaviours and promoting adaptive coping strategies. However, more research is needed to determine the long-term effectiveness, optimal treatment duration, and intensity of CBT.

Pharmacological interventions, including mirtazapine, propranolol, and leuprolide acetate, have shown promise in reducing the frequency and intensity of HSBs in autistic adolescents. Further research is required to establish their safety, efficacy, and comparative effectiveness, as well as to explore the potential benefits of combination therapy or multimodal therapeutic program approaches.

Family involvement and multidisciplinary team approaches are essential in the management of HSBs in autistic individuals. Providing a supportive environment, ensuring consistency in addressing behaviours, and coordinating various interventions can lead to improved treatment outcomes. Developing and evaluating family-based interventions and resources are critical for supporting caregivers effectively.

The current literature on HSBs in autistic adolescents has several limitations, including the scarcity of experimental designs, absence of direct measures of change in HSBs, and lack of follow-up data. Future research should address these limitations and expand to include diversity in the sample population, such as autistic females and those from a range of cultural backgrounds.

#### **Recommendations:**

Clinicians and researchers should collaborate to refine existing interventions and develop new evidence-based approaches for managing HSBs in autistic adolescents.

Researchers should prioritize long-term follow-up studies, comparative effectiveness research, and the development of culturally responsive interventions to address the current gaps in the literature.

Practitioners are suggested to adopt a comprehensive, multidisciplinary approach to address HSBs in autistic young people, incorporating family involvement, CBT, and pharmacological interventions as appropriate.

Policymakers and healthcare organizations should support the development and dissemination of resources, training programs, and evidence-based interventions to enhance the capacity of caregivers, educators, and clinicians in managing HSBs in autistic individuals.

Based on the 12 studies reviewed in this REA, several suggestions for future research on interventions for autistic adolescents and HSBs can be made. These suggestions are as follows:

- 1. Develop and evaluate evidence-based interventions: The studies reviewed here highlight the need for interventions that are specifically tailored to the individual's needs and challenges. Future research should focus on developing and evaluating evidence-based interventions for adolescents with ASC and HSBs. Studies should aim to develop interventions that are effective in reducing HSBs and improving quality of life, while also being feasible and acceptable for both the individuals and their caregivers.
- 2. Incorporate multiple treatment modalities: Many of the studies reviewed here utilized a multi-disciplinary approach that included medication, behavioral therapy, and family therapy. Future research should continue to explore the effectiveness of combining different treatment modalities to develop comprehensive intervention packages for adolescents with ASC and HSBs.
- Address the ethical concerns: Several of the studies reviewed here did not report obtaining ethical approval, which is a significant concern. Future research should ensure that ethical guidelines are followed to protect the rights and well-being of research participants. Additionally, future studies should report on the ethical considerations involved in treating adolescents with ASC and HSBs.
- 4. Consider long-term outcomes: Many of the studies reviewed here did not include followup data to determine the long-term effectiveness of the interventions. Future research should focus on assessing the long-term outcomes of interventions for adolescents with ASC and HSBs, including the maintenance of treatment gains and generalization to different settings.
- Improve measurement tools: The studies reviewed here used a variety of measures to assess HSBs and treatment effectiveness. Future research should focus on developing more standardized and reliable measures of HSBs and treatment outcomes for use in clinical practice and research.
- 6. Increase sample size and diversity: Several of the studies reviewed here had small sample sizes and included only male participants. Future research should aim to increase sample sizes and include more diverse participants to ensure that findings can be generalized to larger populations. Additionally, future studies should explore potential differences in treatment effectiveness based on gender, ethnicity and cultural backgrounds and other demographic factors.

Overall, the studies reviewed here highlight the need for evidence-based interventions that are specifically tailored to the needs of autistic adolescents and HSBs. Further research should focus on developing and evaluating such interventions, incorporating multiple treatment modalities, and addressing ethical concerns. Additionally, further studies should consider long-term outcomes, improve measurement tools, and increase sample size and diversity to ensure that findings can be generalized to larger populations.

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### Abbreviations

- ASC Autism Spectrum Condition Autism Spectrum Disorder ASD Attention Deficit Hyperactivity Disorder ADHD Center for Evidence-Based Management CEBMa CBT Cognitive Behavioural Therapy Exposure and response prevention ERP Harmful Sexual Behaviours HSB Inter-rater reliability IRR Multidisciplinary treatment MDT REA **Rapid Evidence Assessment**
- SRE Sex/relationship education
- TTT Tackling teenage training

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# Background: Autism spectrum conditions and harmful sexual behaviours

Autism Spectrum Disorder (ASD) or 'autism' is a neurodevelopmental disorder characterized by deficits in social communication and interaction, and the presence of restricted and repetitive patterns of behavior, interests, or activities (American Psychiatric Association, 2013). In this report, we choose to use ASC (autism spectrum conditions<sup>1</sup>) rather than ASD, as ASC is an overarching term used to describe autism as a 'spectrum condition', meaning that, although individuals with autism share some common challenges, their condition manifests differently from person to person. The impact of autism also varies depending on an individual's stage of development, environmental demands, and the presence of other conditions such as learning disabilities, depression, ADHD, or anxiety. Additionally, the effects of autism may change over time (National Health Service, 2020). For the purposes of this report, we found ASC to fit better with the descriptions of individuals with autism in the literature that we reviewed.

Autistic individuals may have difficulty with social cues, perspective-taking, and communication, which can lead to social isolation, anxiety, and other mental health problems (Mattys, 2018). Among these challenges experienced by autistic individuals, harmful sexual behaviours (HSBs) have been increasingly recognised as areas of concern (Dredge & Rose, 2022; McLay et al., 2015; Maggio et al., 2022; Sevlever et al., 2013).

Harmful sexual behaviours—also referred to in the literature as problematic sexual behaviour or inappropriate sexual behaviour—involve engaging in sexual activities that are potentially harmful, risky, or otherwise inappropriate for the individual or others involved. These behaviours can have negative consequences for physical, emotional, and mental well-being, and they can also cause distress for the person engaging in them, as well as for others who may be affected (Hackett, 2014).

The management of HSBs in this population is of great importance, as it can lead to negative consequences for the individual, their family, the community, and broader. HSBs can significantly impact the lives of autistic individuals, their families, and their caregivers, leading to increased social isolation, disrupted family life, and exclusion from community and educational and vocational opportunities (Murrie et al., 2002).

Psychological factors, such as deficits in social communication and interaction and emotion regulation, may contribute to the risk of an individual with an ASC displaying or engaging in HSBs (Sevlever et al., 2013). In addition, social factors, such as inappropriate social modeling and lack of social boundaries, may also play a role in the development of HSBs in autistic individuals (Weiss & Fardella, 2018). Due to the complex nature of HSBs and ASCs, specialized interventions are likely needed to address this issue effectively.

<sup>&</sup>lt;sup>1</sup> See National Health Service, Autism Spectrum Condition (ASC) for more information. https://www.england.nhs.uk/coronavirus/documents/covid-19-guide-autism-spectrum-condition-asc/

#### Factors contributing to HSBs in autistic adolescents

Autistic adolescents and with problematic sexual behaviours or HSBs may face unique challenges when it comes to understanding and navigating social and sexual interactions (Clionsky & N'Zi, 2019). Due to difficulties with social communication, understanding social cues, and comprehending complex social situations, they may be at a higher risk of engaging in or displaying harmful sexual behaviours (Allely & Creaby-Attwood, 2016).

Potential factors of problematic and harmful sexual behavior among children and adolescents include difficulties in social skills, sensory issues, difficulties understanding others' thoughts and emotions, or the ramifications of their behavior (Payne et al., 2020). Other reasons why this group might engage in problematic or harmful sexual behaviour might be due to restricted interests, which may include atypical sexual interests (Payne et al., 2020). A brief overview of the factors that may contribute to the risk of harmful sexual behaviours among autistic adolescents are briefly summarised, below.

*Social skill deficits:* Autistic adolescents may struggle with understanding social cues, reading body language, and interpreting the feelings and intentions of others. This can lead to misinterpretations or misunderstandings in social and sexual situations, potentially resulting in inappropriate behaviours.

*Limited understanding of social norms:* Autistic adolescents may have difficulty grasping social norms and expectations, which could lead to inappropriate sexual behaviours that are unintentional or stem from a lack of understanding.

*Lack of sexual education:* Autistic adolescents may not receive adequate sex education that is tailored to their specific needs and learning styles. This can result in a lack of knowledge about appropriate sexual behavior, consent, and boundaries.

*Restricted interests and repetitive behaviours:* Some individuals with autism may develop an intense interest in a specific topic, including sex or sexual material. This interest may lead to inappropriate or harmful sexual behaviours if not addressed and managed appropriately.

Given the above, autistic adolescents and HSBs require specialized interventions that consider the individual's unique cognitive, social, and emotional needs, as well as the complex interplay of psychological and psychosocial factors that contribute to this group displaying and engaging in HSBs.

#### Evidence base for addressing HSBs amongst autistic adolescents

Several interventions have been proposed to treat a range of inappropriate, problematic, harmful, or abusive sexual behaviours in adults with an ASC, including cognitive-behavioral therapy, pharmacological interventions, and behavioral interventions (Dredge & Rose, 2022; McLay et al., 2015; Maggio et al., 2022; Sevlever et al., 2013). However, the efficacy of these interventions is not well-established, and more research is needed to determine the most effective interventions for this population.

Although there is a growing body of research on interventions for adults with an ASC, the evidence bases specifically addressing harmful sexual behaviours among autistic adolescents is limited. Some studies have shown the effectiveness of interventions in improving social skills, emotion regulation, and communication, which may indirectly contribute to reducing the risk of harmful sexual behaviours. However, direct evidence for the impact or effectiveness of interventions targeting harmful sexual behaviours in this population is scarce. Some intervention approaches that have shown promise for individuals with autism spectrum conditions in general include:

*Social skills training:* Social skills training programs have been demonstrated to improve social functioning in autistic adolescents. Although these programs may not directly target harmful sexual behaviours, they can help individuals with ASC better navigate social situations, which could indirectly reduce the risk of inappropriate sexual behaviours.

*Cognitive-behavioural therapy (CBT):* CBT has been shown to be effective in addressing various mental health concerns in autistic individuals, such as anxiety and depression. Adapting CBT to focus on harmful sexual behaviours may be a promising approach, but further research is needed to establish its effectiveness for this specific issue.

*Psychoeducation and sex education:* Providing tailored sex education for autistic individuals can help them better understand appropriate sexual behaviours, consent, and boundaries. Although there is some evidence to suggest that adapted sex education can be beneficial for individuals with ASC, more research is needed to determine its effectiveness in reducing harmful sexual behaviours specifically.

*Family therapy and parent training:* Family therapy and parent training have been shown to improve family functioning and communication, which may indirectly reduce the risk of harmful sexual behaviours. However, research on the direct impact of these interventions on harmful sexual behaviours in autistic adolescents is limited.

Overall, there is a need to better understand the effectiveness or impact of interventions specifically targeting harmful sexual behaviours in autistic adolescents and to develop and evaluate approaches for this group. Although some intervention approaches have shown promise in addressing related issues, it is of high priority to investigate within the peer-reviewed academic literature the interventions that address the unique challenges and needs of this cohort.

Given the above, in this REA we aim to synthesize the current peer-reviewed academic literature on interventions for autistic adolescents and HSBs, and to determine the impact or effectiveness of interventions on reducing the risk of this group displaying or engaging in HSBs, to critically appraise the strengths and limitations of the current research and provide implications for practice and suggestions for future research and intervention design for autistic adolescents and HSBs.

# Context and rationale for an REA on interventions for autistic adolescents and HSBs

Bravehearts has developed *Turning Corners*, a program that provides a comprehensive and integrated response to working with young people between the ages of 12 and 18, and up to the age of 21 for individuals with an intellectual impairment, who have engaged in or are at risk of engaging in harmful sexual behaviour. Using evidence-based assessments and interventions to help reduce the risk of young people engaging in harmful sexual behaviours, the program incorporates five essential components of treatment including 1) community safety, 2) addressing harm caused, 3) preventing further harm, 4) promoting well-being, and 5) education. The Bravehearts' *Turning Corners* team is comprised of psychologists, social workers, and counsellors, who specialise in working with young people with HSBs or who are at risk of these behaviours.

Recently, in 2021-2022 the *Turning Corners* team observed an increase in the number of referrals and enrolments of young people with a diagnosis of autism spectrum condition (ASC) into the program. Given this increase in the number of referrals and enrolments of these young people into *Turning Corners*, Bravehearts wanted to better understand the evidence base for working with this cohort. With this knowledge, the *Turning Corners* team can provide evidence-based assessments and interventions to help reduce the risk of young people with an ASC and HSBs. To seek out this evidence, Bravehearts commissioned the Institute of Child Protection Studies at the Australian Catholic University to conduct a rapid evidence assessment (REA) for interventions that involve autistic adolescents and who are between the ages of 12 and 18 and who engage in or are at risk of engaging in HSBs.

# Question

This REA was conducted to understand what academic research has discovered about the effectiveness or impact of interventions for autistic adolescents who are at risk of or who display and engage in HSBs: *What is known in the peer-reviewed scientific literature about the effectiveness of interventions for autistic adolescents with HSBs?* 

# Supplementary questions that the REA aims to address

- What are the various types of interventions available for this cohort? E.g., psychoeducation, pharmacological, or other?
- What content or key themes are covered in any program interventions?
- What strategies or methods are utilised across the interventions?
- What is the assumed causal mechanism explaining what makes the intervention effective?
- What is suggested as 'best practice' for interventions for this cohort?
- What is known about the overall effect of interventions to reduce the risk of autistic adolescents engaging in HSBs?
- What are the facilitators (enablers) and challenges (barriers) in providing interventions for this cohort?

On the available evidence this REA will provide recommendations on the next steps in the development of research and interventions for this cohort.

# Methodology

We used the Center for Evidence-Based Management (CEBMa) Guidline for Rapid Evidence Assessments (Barends et al., 2017) to conduct this REA.

Figure	1.	PICOC	constructs
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Population Intervention	Who? What or How?	Young people between the ages of 12 and 18 with an autism spectrum condition To reduce the risk of this cohort engaging in HSBs or to reduce or eliminate the HSBs of the adolescent
Comparison	Compared to what?	NA
Outcome	What are you trying to accomplish / improve / change?	Acquire a good understanding of these kinds of interventions for this group and to highlight gaps in research and current programs. This is so future work can build on these areas and help to further reduce the risk of HSBs in this group.
Context	In what kind of organization / circumstances?	Any organisational setting and context that is providing prevention, intervention and treatment for HSBs in the population group as identified above.

# Inclusion Criteria

- **Date**: any date of publication
- Language: articles in English.
- **Published**: in a peer reviewed journal
- Type of studies: any
- Study design: any
- **Data**: must include original data
- **Measurement**: any intervention and/or including **a**) studies in which the effect of intervention outcomes that reduced engagement in harmful sexual behaviours was measured or **b**) studies in which the effect of moderators and/or mediators on the outcome of the intervention reduced engagement of harmful sexual behaviours was measured or **c**) studies which describe an intervention or program or treatment where an aim is to reduce the young people's display and/or engagement in HSBs or their risk of engagement in HSBs
- **Outcome**: reduction in the display and engagement of harmful sexual behaviours, and/or a reduction in the risk of the young person to display or engage in HSBs.
- **Context**: concerns HSBs and are studies related to the prevention and or intervention/treatment of HSB and includes a research focus on participants who are autistic adolescents between the ages of 12-18 in line with definition of HSBs\* adopted for this REA and with an ASC.

\*This REA is guided by the definition of HSBs developed by Hackett et al., 2019 (derived from Hackett, 2014), i.e., "...Sexual behaviours expressed by children and young people under the age of 18 years old that are developmentally inappropriate, may be harmful towards self or others, or be abusive towards another child, young person or adult." (p. 13).

# **Exclusion Criteria**

This REA will exclude:

- unpublished research
- articles in a language other than English
- studies that are not published in peer reviewed journals
- studies where autistic adolescents between 12- 18 years of age are not the research focus
- studies that do not include participant data (case studies/reports are to be included)
- studies that do not include HSBs

The REA will limit the number of reviewers who critically appraise the studies' rigor to two.

# Limitations

The 'rapid' approach of the current review is not without its limitations. To meet the criteria of an REA (Barends et al., 2017), the current review excluded certain types of research (unpublished) and included only peer-reviewed studies. Due to time and resource constraints, we did not search for study findings reported in conference papers and proceedings, dissertations and theses and working papers and did not perform a random 'dip' sample. As such, we could not determine if the findings reported in these sources were notably different from those in studies published in peer-reviewed journals. Only one reviewer critically appraised the rigor of the included studies. Due to these limitations, the current REA is prone to selection bias and is an acknowledged limitation of the review.

# Search Strategy and Process

The following six databases were used to identify studies: Medline, PsycInfo, ERIC, CINAHL, Web of Science (All fields search) and Scopus. No limiters were applied to the search strategy.

The search conducted used combinations of terms such as, adolescen<sup>\*</sup>, "harmful sexual<sup>\*</sup> behavio<sup>\*</sup>", "autism spectrum diagnos<sup>\*</sup>" OR ASD OR autis<sup>\*</sup>. We conducted 7 different search queries and screened the title and abstracts of 34 studies. An outline of search terms and queries is provided in Appendix A. The search process described above is documented in Table 1. Search Process and shows the concepts, the search terms used, how the terms were combined, and the number of studies found in each database and includes the date that the search was performed, and the search filters applied during the search.

Table 1. Search Process.

	<b>2</b> 11	0 10	0 ( 0	<b>D</b> 14
	Concept 1	Concept 2	Concept 3	Results
Search terms TI/AB	adolescen* OR youth OR "young people" OR "young person" OR teen* OR child*	"harmful sexual* behavio*" OR "problem* sexual* behavio*" OR "concern* sexual* behavio*" OR "reactive sexual* behavio*" OR "sex* harm* behavio*" OR "sex* reactive behavio*"	"autism spectrum diagnos*" OR ASD OR autis* OR "autism spectrum disorder" OR ASC OR "autism spectrum condition"	
Medline MeSH	(MH "Adolescent") OR (MH "Child")	N/A	(MH "Autistic Disorder") OR (MH "Autism Spectrum Disorder")	2
PsycInfo	(ZG "adolescence (13-17 yrs)")	N/A	DE "Autism Spectrum Disorders"	9
ERIC Thesaurus	(DE "Children") OR (DE "Adolescents")) OR (DE "Youth")	N/A	DE "Autism" OR DE "Pervasive Developmental Disorders"	1
CINAHL Subject Terms	(MH "Child") OR (MH "Adolescence")	N/A	(MH "Autistic Disorder")	5
Web of Science (All fields search)	Keywords as above	Keywords as above	Keywords as above	9
Scopus	Keywords as above	Keywords as above		8
Total				34
Duplicates r	emoved			16
To be screer	ned			18
1 1 14		1 40/00/0000		

Limiters: None; Date search performed: 10/02/2023.

#### **Study Selection**

The studies retrieved from the search process were screened by the first author for inclusion criteria. In addition, the reference lists of studies retrieved were screened to identify articles for possible inclusion in the REA. Screening was undertaken as a two-stage process. In stage 1, the titles and abstracts of the studies retrieved through the searches were reviewed by the first author. Each abstract was compared against the inclusion criteria, and if met, were set aside for a full study review in stage 2. If any doubt was had, the study was included. At the end of this process a total of six articles were identified as eligible for stage 2 full study review.

The reference lists of these six articles were then hand searched, with six more article/s being identified. The title and abstracts of these six articles were screened and from this process all were set aside for a full study review in stage two.

At the end of this process a total of 12 articles were identified as eligible for a full study review in stage 2.

In stage two, author one read each of the 12 articles included from stage one in full and compared them against the inclusion criteria. To ensure the trustworthiness of the REA findings, author two took a random sample from the studies included and independently reviewed them for inclusion criteria. To quantify the degree of agreement with the first author, the inter-rater reliability (IRR) was assessed (Hallgren, 2012). Disagreements were solved by discussion and consensus between reviewers. The IRR's magnitude indicates that the extent of agreement among the reviewers is good.

The selection process described above is documented in Table 2. Selection Process and shows the articles obtained from each database, articles obtained from search, duplicates removed, titles and abstracts screened for relevance, studies excluded, studies full text screened for relevance, critical appraisal, and final number of included studies.

At the end of this process a total of 5 articles were identified as eligible for our review. Given the limited selection of studies identified for review on the topic, we then chose to go back and search for studies included in four different reviews on the topic, as identified in stage 1. After this additional step of hand searching the studies included in four different reviews, a further 7 articles were identified. This then brought the total number of articles identified as eligible for our review to 12.

Table 2. Selection Process.

Stage / Step	Number of Articles
Articles obtained from database search	34
Articles obtained from reference lists	6
Total articles identified	34+6
Duplicates removed	16
Stage 1:	
- Titles and abstracts screened	18+6
- Studies excluded	12
- Eligible for stage 2 review	12
Stage 2:	
- Full-text articles reviewed	12
- Critical appraisal	12
- Inter-rater reliability (IRR)	Good
- Studies excluded	7
- Initially included studies	5
Additional hand search:	
- Studies from four different reviews	7
Total included studies	12

### Data Extraction

A standardised data extraction template was utilized for each included study, following recommendations from the Cochrane Handbook for Systematic Reviews of Interventions. A summary of the extracted data can be found in Table 3, titled "Data Extraction.

Table 3 Data extraction

Study #	Authors & Year	Participants & Characteristics	Behavior	Study Design	Intervention	Outcomes	Key Findings
1	Shenk, C. & Brown, A. 2007.	14-year-old white male, borderline cognitive functioning, history of sexual offenses	Sexual deviancy, excessive/public masturbation, deviant fantasies	AB design, case study, quantitative, CBT approach	Daily group therapy, weekly individual CBT, 45-week residential program, exposure and response prevention	Reduced arousal, masturbation, and recidivism risk; improved emotional communication and empathy	Successful treatment and reintegration into family and community
2	Thompson, A.R. & Beail, N. (2002)	18-year-old male, severe intellectual disabilities, auto- erotic asphyxiation	Daily auto-erotic asphyxiation	AB design, qualitative case study, staged intervention procedure	Desensitizing to penis, teaching appropriate masturbation techniques, home practice with monitoring	Reduction in dangerousness, slow progress in generalization	Behavioural intervention did not eliminate auto- erotic asphyxiation
3	Pritchard, D., et al. (2016)	17-year-old male, autism spectrum disorder, harmful sexual behavior	Sexual touching, gestures, comments, threats, aggression, absconding, disruption, self- harm	AB design, quantitative, multi- component behavioural intervention	Points and level system, active support, CBT, sex and relationship education, offense-specific intervention	Reduced harmful/inappropriate sexual behavior, increased community visits	Benefits of intensive, long- term multi- component treatment in residential settings
4	Visser, K., et al. (2017)	189 adolescents (12-18 years) with autism spectrum disorder	Psychosexual development, interpersonal boundaries	Randomized controlled trial, Tackling Teenage Training program	Psychoeducation and communicative skills practice related to puberty, sexuality, and	Improved psychosexual knowledge, insight, social functioning, decreased problematic sexual behavior	TTT program effective for younger adolescents with ASD

					intimate relationships		
5	Griffin- Shelley., E. (2010)	14-year-old male with Asperger's, sex addiction, and sexual offending behavior	Masturbation, accessing pornography, sexual offenses	Case study, CBT approach	Group therapy, psychoeducation, relapse prevention, individual therapy sessions	Possible reduction in recidivism behaviours, continued lying and deception	Addiction model of treatment may be more effective than offender model, community aftercare showed positive changes
6	Ray, F., Marks, C., & Bray- Garretson, H. (2004)	Four male adolescents with Autism Spectrum Condition (ASC)	Sexually inappropriate behaviours towards others	Case studies	Residential multidisciplinary treatment (MDT) package adapted for ASC, based on CBT, narrative elements, involving family/carers, and direct care staff	Anecdotal evidence of improvements in flexibility in thinking, emotional regulation skills, willingness to try new things, and psychosexual problems	Recommendations for interventions include tailoring to individual needs, involving family, training direct care staff, using evidence-based approaches, and continuous monitoring
7	Deepmala, D & Agrawal M (2014)	13-year-old boy with severe autism	Hypersexual behavior and aggression	Narrative case report using a qualitative ABA design	Low-dose propranolol (0.3 mg/kg/d, or 10 mg twice daily) prescribed at a psychiatric clinic	Decreased hypersexual behavior in school and home settings, reduced pacing behavior	Propranolol therapy was effective in reducing hypersexual behaviours without reported side effects

8	Kohn Y. Fahum T. Ratzoni G. & Apter A. (1998)	16-year-old boy diagnosed with Asperger's syndrome, conduct disorder, and IQ of 120	Aggressive and sexual offenses	Single case study with a narrative and qualitative design	Series of residential treatments focusing on pharmacotherapy (levopromazine, lithium, carbamazepine, propanol, and cyproterone acetate), psychotherapy, and family therapy	Anecdotal evidence of substantial improvement in harmful sexual behavior (HSB) with the introduction of a beta-blocker and antiandrogen	Hospital admissions alone were insufficient, but combined pharmacotherapy led to improved behavior
9	Fosdick, C., & Mohiuddin, S. (2016)	15-year-old male with autism spectrum disorder and intellectual disability	Severe sexual aggression	Single case study, narrative, and qualitative approach	Leuprolide acetate (25 mg every three months), behavioural therapy (3-4 times per week), monitored in a community setting	Anecdotal evidence of reduced sexual aggression during leuprolide acetate use; problematic behavior reoccurred during gap in medication and resolved when resumed	Leuprolide acetate effective in reducing sexual aggression with some side effects
10	Coskun, M., & Mukaddes, N. M. (2008)	13-year-old boy with autism spectrum disorder, moderate mental retardation, severely impaired language development,	Inappropriate sexual behavior (ISB), aggression, and agitation	Case report using qualitative ABA design	Mirtazapine (15 mg/day) for 10 weeks	Fetishistic behavior ceased during treatment and reemerged when stopped	Positive treatment effects, but limitations include lack of experimental design, unclear outcome measures, and no follow-up data

# and stereotypic play patterns

11	Coskun, M., Karakoc, S., Kircelli, F., & Mukaddes, N. M. (2009)	Eight male participants aged 12-16 years with autism spectrum disorder and various co- occurring conditions	Inappropriate sexual behavior (ISB)	AB design with 8-week treatment	Mirtazapine with an initial dosage of 7.5-15 mg/day, increased to a maximum of 30 mg/day	Improvement in excessive masturbation and other ISB; reduced time spent in ISB, with some participants almost stopping ISB entirely	Positive treatment effects, but limitations include lack of experimental design, no direct measures of change in ISB, and no follow-up data
12	Nguyen, M., & Murphy, T. (2001)	13-year-old white male with autism	Excessive masturbation, minimal appropriate social interaction	Case report using qualitative AB design	Mirtazapine, after an initial unsuccessful behavioural intervention	Improved frequency of nightly masturbation, cessation of public displays of masturbation, better sleep, increased hunger, improved social relatedness	Mirtazapine was effective in reducing excessive masturbation and improving social relatedness

# Critical Appraisal of studies

# Methodological appropriateness and quality

It is crucial to ascertain the trustworthiness of scientific studies, considering their validity and reliability. We evaluated the methodological appropriateness and quality of the studies included in this REA. To assess the methodological appropriateness of the studies included in this REA, we employed the following six levels of appropriateness, derived from the classification systems proposed by Shadish, Cook, and Campbell (2002), and Petticrew and Roberts (2008). To assess the methodological quality of the studies we used Kmet et al. (2004) standard quality assessment criteria for evaluating primary research papers from a variety of fields.

After critical appraisal of the 12 included studies for this REA, the overall quality of the included studies was assessed to be low, with most studies rated at the lowest level for appropriateness (Petticrew & Roberts, 2008; Shadish et al., 2002) and poorest scoring for quality (Kmet et al., 2004). Just one study (Visser et al., 2017), a randomised control trial scored highly. For instance, all but three of the studies included in this REA were single case study reports. As a result, the trustworthiness of the scientific evidence supporting the following main findings is limited.

#### Results

Twelve papers were included for our REA. Six papers described a range of non-pharmacological interventions as the primary treatment of HSBs in autistic adolescents and the remaining six papers described several pharmacological interventions as the primary treatment of HSBs in autistic adolescents. Table 4 below provides a summary of the non-pharmacological interventions and following this Table 5 provides a summary of the pharmacological interventions.

Table 4.	Summary of	of non-pharmacologi	cal interventions	for adolescent	with an ASC.
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Study	Intervention
Shenk &	Cognitive-behavioural therapy (CBT) approach targeting dynamic/static risk
Brown (2007)	factors, daily group therapy, weekly individual psychotherapy, 45-week
( )	residential program, and exposure/response prevention (ERP).
Thompson &	Staged procedure involving desensitization with lifelike models, teaching
Beail (2002)	appropriate masturbation techniques, and encouraging monitored home
Υ γ	practice.
Pritchard et	Multi-component behavioural intervention: points/level system, active support,
al. (2016)	CBT, sex/relationship education (SRE), and offense-specific intervention.
Visser et al.	Tackling Teenage Training (TTT) program: psychoeducation and communicative
(2017)	skills practice related to puberty, sexuality, and intimate relationships for
	adolescents with ASD.
<b>Griffin-Shelley</b>	Lengthy assessment/information-gathering process, group therapy,
(2010)	psychoeducation, relapse prevention, and individual therapy sessions using a
. ,	CBT approach.
Ray et al.	Residential multidisciplinary treatment (MDT) package adapted for individuals
(2004)	with ASC, based on CBT, narrative elements, and involving family/carers.
	Included work with direct care staff to demonstrate the reasons behind the
	patients' behaviours.

Study	Participant Age/Gender	Condition(s)	Treatment
Deepmala & Agrawal (2014)	13-year-old male	Severe autism	Low-dose propranolol
Kohn et al. (1998)	16-year-old male	Asperger's syndrome, conduct disorder	Combination of a beta- blocker and an antiandrogen
Fosdick & Mohiuddin (2016)	15-year-old male	ASD, intellectual disability	Leuprolide acetate
Coskun & Mukaddes (2008)	13-year-old male	ASD	Mirtazapine
Coskun et al. (2009)	5-16 years old (10 participants)	ASD, verbal or non-verbal and with major depression or ADHD	Mirtazapine
Nguyen & Murphy (2001)	13-year-old male	Autism	Mirtazapine

Table 5. Summary of pharmacological interventions for adolescent with an ASC.

# Main Findings

What are the key features of research relating to interventions for autistic adolescents who display or who are at risk of displaying HSBs?

# Country

The studies in this REA included participants from the following countries: US (1, 5, 6, 7, 9, 12); UK (2, 3); Turkey (10, 11); The Netherlands (4); and Israel (8).

# Setting

The studies in this REA described interventions administered within a range of settings, including residential treatment facilities, community settings, home settings, special schools, mental health institutions, and clinical and medical settings. The study and corresponding setting and country that the interventions were administered in are provided in Table 6, below.

Table 6. Intervention settings.

Study	Sotting	Country
Study		Country
Shenk & Brown	Residential treatment facility (Hand Up Homes for	United States
(2007)	Youth)	
Thompson & Beail	Outpatient setting, transitioning to the patient's home	United
(2002)		Kingdom
Pritchard et al. (2016)	Residential special school	United
		Kingdom
Visser et al. (2017)	Mental health institutions, special education schools, or	The
	through open applications	Netherlands
Griffin-Shelley (2010)	Residential treatment (3 years), continued as	United States
	community treatment	
Ray et al. (2004)	Clinical setting, working with family, caregivers, and	Unknown
	direct care staff	
Deepmala & Agrawal	Psychiatric clinical/medical setting	United States
(2014)		
Kohn et al. (1998)	Residential treatment setting	Israel
Fosdick & Mohiuddin	Community setting	United States
(2016)		
Coskun & Mukaddes	Clinical/medical setting	United States
(2008)	-	
Coskun et al. (2009)	Not specified	Unknown
Nguyen & Murphy (2001)	Clinical child mental health unit	United States

# What are the characteristics of the autistic adolescents who are included in interventions for HSB?

The studies included 210 participants with diverse characteristics, primarily focusing on male adolescents with autism spectrum disorders. Participant ages ranged from 12 to 18 years old, with most studies focusing on individuals with various degrees of intellectual disabilities or cognitive impairments. The sample sizes varied from mostly single case studies (Coskun & Mukaddes, 2008; Deepmala & Agrawal 2014; Fosdick & Mohiuddin, 2016; Griffin-Shelley, 2010; Kohn et al. 1998; Nguyen & Murphy, 2001; Pritchard et al., 2016; Ray et al., 2004; Shenk & Brown, 2007; Thompson & Beail, 2002) to larger groups, such as Visser et al. (2017), which included 189 participants aged 12-18. A few studies mentioned the ethnicity of their participants, most reported as 'white'. Several studies reported on participants communication impairments as verbal or non-verbal or comorbid diagnoses including conduct disorder, major depression, and attention deficit hyperactivity disorder. See Table 7 below, for an overview of the characteristics of the autistic adolescents in interventions to address their HSBs.

Study	Age	Gender	Characteristics
Shenk & Brown (2007)	14	Male	White, Autism, Borderline cognitive functioning
Thompson & Beail (2002)	18	Male	Autism, Severe intellectual disabilities
Pritchard et al. (2016)	17	Male	White British, Autism spectrum disorder
Visser et al. (2017)	12-18 (avg. 14.5)	M & F	Autism spectrum disorder
Griffin-Shelley (2010)	14	Male	Autism
Ray et al. (2004)	14-17	Male	4 case studies: Autism Spectrum Condition (ASC) Case study 1: 15-year-old male with ASC.
			Case study 2: 17-year-old male with ASC. Case study 3: 16-year-old Caucasian male with ASC. Case study 4: 14-year-old African American male with ASC.

Table 7. Characteristics of the autistic adolescents in interventions for HSBs.

Deepmala & Agrawal (2014)	13	Male	Severe autism
Kohn et al. (1998)	16	Male	Asperger's syndrome, Conduct disorder
Fosdick & Mohiuddin (2016)	15	Male	Autism spectrum disorder, Intellectual disability
Coskun & Mukaddes (2008)	13	Male	Autism spectrum disorder, Moderate mental retardation, Severely impaired language, Stereotypic play
Coskun et al. (2009)	12-16	M & F	8 males, Autism spectrum disorder, Verbal/non- verbal, Major depression or ADHD
Nguyen & Murphy (2001)	13	Male	White, Autism, No verbal communication, Minimal nonverbal communication

# Description of the HSBs that the Adolescents with ASC are Receiving

### intervention For

The studies included in this REA encompass a wide range of harmful sexual behaviours (HSB) displayed by the autistic adolescents. Many of the behaviours for which the adolescents were receiving intervention or treatment were those directed at others (e.g., sexual assault and abuse of younger children, harmful sexual behaviours directed at younger children or peers, problematic sexual behaviour with others such as family members including younger siblings, the sexual touching and rubbing of women, sexual touching of others to generate self-stimulation, hypersexual behaviours, sexual gestures and aggression and sexually abusive and/or sexually offensive behaviour). Other behaviours for which adolescents were receiving intervention or treatment were self-inflicted or directed at the self and were reported to be either causing harm to the adolescent themselves or were observed to be problematic or inappropriate and as causing distress for others, including family

members and those in the community (e.g., at school), or were behaviours that the adolescent engaged in or displayed in a public setting. These behaviours were reported to be excessive masturbation, fetishist behaviour or sexually deviant behaviour, auto-erotic asphyxiation, paraphilia, touching one's own genitals in public, disrobing, pinching nipples, and ejaculation in public. Table 8 details these HSBs as reported in adolescents.

Table 8. Description of HSBs	displayed by	autistic adolescents.
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Study	Participant and description of their HSB
Shenk & Brown, 2007	14-year-old white male with borderline cognitive functioning, arrested
	for sexually assaulting two younger children, prior sexual offenses,
	excessive and public masturbation, and deviant fantasies
Thompson & Beail,	18-year-old male involved in auto-erotic asphyxiation
2002	
Pritchard et al., 2016	17-year-old white British male with harmful sexual behaviour, sexual
	abuse history, multiple admissions and convictions for sexual offenses
visser et al., 2017	189 participants aged 12-18 (average age 14.5), provided
	psychoeducation and communicative skills practice related to puberty,
	sexuality, and intimate relationships for addressents with ASD who
Griffin Shallov 2010	14 year old male in the USA, diagnosed with sex addiction and
Grinni-Sheney, 2010	sexually offending behaviour towards family members and others
Ray et al., 2004	Four case studies of male adolescents with ASC displaying sexually
,,	inappropriate behaviours towards others.
	Case study 1: 15-year-old male with ASC, physically and sexually
	threatening behavior towards staff.
	Case study 2: 17-year-old male with ASC, paraphiliac tendencies
	towards other service users, including masturbation with their
	belongings.
	Case study 3: 16-year-old Caucasian male with ASC, several sexually
	coercive and aggressive actions towards children.
	Case study 4: 14-year-old African American male with ASC, extensive
	nistory of sexually inappropriate benavior and obsessive
Doopmala 8 Agrawal	12 year old boy with sovere outism, hypersoxual heboviour, and
201 <i>1</i>	addression
Kohn et al 1998	16-year-old boy in Israel, aggressive and sexual offenses
Fosdick, C., &	A 15-year-old male in the USA with autism spectrum disorder (ASC)
Mohiuddin, S. (2016).	and intellectual disability was observed for severe sexual aggression
	towards his younger brother and other children.
Coskun, M., &	A 13-year-old boy with autism spectrum disorder (ASD) displaying
Mukaddes, N. M.	fetishist behaviour.
(2008).	
Coskun, M., Karakoc,	Eight male adolescents with an ASD displaying masturbation, foot
S., Kircelli, F., &	fetishism, touching and rubbing women, irritability, aggression,
WUKADDES, N. M.	touching women's breasts, disrobing, self-biting, and socks fetishism.
(2009). Nguyon M. 8 Murahy	A 13 year old white male with autism displaying excessive
T $(2001)$	a 10-year-old while male with autistit displaying excessive masturbation both in the home and in public settings
	mastaisation sour in the nome and in public settings.

What is the nature of interventions for autistic adolescents who display HSB or who are at risk of displaying HSB?

# Description of the interventions including strategies and treatment methods

Most study authors reported on individualised interventions involving one client, an adolescent with an ASC and HSBs, and often with identified comorbid diagnoses or reported behavioural or mental health issues. A total of four of the included studies (Coskun & Mukaddes, 2008; Coskun et al., 2009; Deepmala & Agrawal, 2014; Nguyen & Murphy, 2001) utilised pharmacotherapy as the sole treatment of HSBs in autistic adolescents. A total of six of the included studies (Griffin-Shelley, 2010; Pritchard et al., 2016; Ray et al., 2004; Shenk & Brown, 2007; Thompson & Beail, 2002; Visser et al., 2017) utilised a range of non-pharmacological interventions to address HSBs in autistic adolescents. The remaining two of the included studies utilised pharmacotherapy (Fosdick & Mohiuddin, 2016; Kohn et al., 1998) alongside other therapeutic modalities.

The interventions and treatments in the studies utilised various strategies and methods to address the behaviours displayed by the adolescents. These included cognitive-behavioural therapy (CBT), exposure and response prevention (ERP), psychoeducation, relapse prevention, pharmacotherapy, and behavioural interventions. Several interventions were identified to include a broader intervention outcome or treatment goal to address community safety, addressing harm caused, preventing further harm, promoting well-being, and education – described as psychoeducation related to puberty, sexuality, intimate relationships, sex and relationship education, and psychosexual education.

Key outcomes of several of the interventions included managing and reducing sexual arousal, challenging cognitive distortions, enhancing empathy, and developing relapse prevention plans. Some studies involved parental monitoring, structured residential programs, and tailored staff training. Interventions were often personalised and adjusted based on the adolescent's individual needs, with some employing pharmacological treatments (such as propranolol, mirtazapine, or leuprolide acetate<sup>2</sup>), alongside therapy.

Just one study (Visser et al., 2017) was reported as focused on the primary preventive psychoeducational effects of a program (Tackling Teenage Training). The authors rationale for a prevention focus to the study for investigating HSBs among autistic adolescents was due to ethical concerns about placing adolescents with obvious psychosexual issues on a waiting list for one year, as per study intervention

<sup>&</sup>lt;sup>2</sup> See Mayo Clinic (2023) - Drugs and Supplements – Propranolol – Mirtazapine - Leuprolide acetate for more information on these drugs. Propranolol is a beta-blocker. It works by affecting the response to nerve impulses in certain parts of the body, like the heart. It is used to treat heart problems as well as help with anxiety and is a treatment option for violent behaviour (soure: . Mirtazapine is a tetracyclic antidepressant. It works by making certain chemicals, serotonin and noradrenaline in the brain, stronger. It is used to treat depression. Leuprolide acetate is a synthetic hormone that is similar to a natural hormone that is produce in the brain. It works to … It is used to treat many medical issues eg., cancer of the prostrate and when given to men, leuprolide descreses testosterone levels. When given to women, leuprolide decreases estrogen levels.Leuprolide acetate has been investigated in studies as a treatment option for sex offending males (e.g., Gallo et al., 2018).

requirements. In addition, the authors identified that there is an urgent need for further research to explore how an increase in psycho-sexual knowledge and insight to the self can improve romantic skills and prevent the development of problematic sexual behaviour and victimisation amongst this cohort. An overview of the interventions is provided below. Following this, Table 9 provides a summary of the interventions for the treatment of HSBs in autistic adolescents.

# 1. Shenk, C. & Brown, A. (2007).

The strategies used in the treatment focused on managing and reducing sexual arousal and deviancy, challenging cognitive distortions, enhancing empathy, developing relapse prevention plans, and improving emotional communication. The treatment included daily group therapy, weekly individual psychotherapy with a CBT therapist, and a highly structured 45-week residential program targeting dynamic and static risk factors, alongside exposure and response prevention (ERP) targeting inappropriate sexual behaviour and deviant fantasies.

# 2. Thompson, A.R. & Beail, N. (2002).

Implemented a staged intervention procedure. This involved desensitising the participant to his penis using three lifelike models, teaching appropriate masturbation techniques, and encouraging home practice with monitoring. The participant's engagement was assessed through three process measures: 1) ability to grip and touch the model, 2) quality of movement on the model, and 3) number of movements on the model. Any unprompted generalizations during treatment were documented, and parents recorded the weekly frequency of auto-erotic asphyxiation throughout the assessment, intervention, and at a 6-month follow-up.

# 3. Pritchard, D., et al. (2016).

A multi-component behavioural intervention that lasted 115 weeks. The intervention included a points and level system, active support, cognitive-behavioural therapy (CBT), sex and relationship education (SRE), and an offense-specific intervention provided by the local Youth Justice Team. A behavioural contingency contract was introduced in week 66. Before his arrival, staff received training tailored to his needs, including a CBT-based token economy system with four levels, weekly individual CBT sessions, socio-sexual education, and offense-specific intervention.

# 4. Visser, K., et al. (2017).

The Tackling Teenage Training (TTT) program provided psychoeducation and communicative skills practice related to puberty, sexuality, and intimate relationships for autistic adolescents. The study aimed to assess the program's effects on cognitive outcomes (psychosexual knowledge and insight into interpersonal boundaries) and behavioural outcomes (skills needed for romantic relationships and problematic sexual behavior).

# 5. Griffin-Shelley., E. (2010).

The intervention involved a lengthy assessment and information-gathering process, followed by group therapy, psychoeducation, relapse prevention, and individual therapy sessions using cognitive-behavioural therapy (CBT) approach. The treatment initially started as residential for three years and then continued as community treatment.

6. Ray, F., Marks, C., & Bray-Garretson, H. (2004).

The four case studies describe male adolescents with Autism Spectrum Condition (ASC) who display sexually inappropriate behaviours towards others. A residential multidisciplinary treatment (MDT) package adapted for individuals with ASC, based on Cognitive Behavioural Therapy (CBT), narrative elements, and involving family/carers where appropriate. The intervention also includes work with direct care staff to demonstrate the reasons behind the patients' behaviours.

7. Deepmala, D & Agrawal, M. (2014).

Intervention involved the creation of self-report and parent-reported scales measuring specific ASD-related inappropriate sexual behaviour. The boy was prescribed low-dose propranolol (0.3 mg/kg/d, or 10 mg twice daily) at a psychiatric clinic. The patient's mother and school staff were asked to keep a diary of the child's hypersexual behaviour, and his blood pressure and heart rate were monitored during monthly clinic visits.

8. Kohn, Y. Fahum, T. Ratzoni, G. & Apter, A. (1998). The adolescent with an ASC and aggressive and sexual offenses underwent a series of residential treatments, with a focus on pharmacotherapy, including levopromazine, lithium, carbamazepine, propanol, and cyproterone acetate. Psychotherapy and family therapy were also provided.

9. Fosdick, C., & Mohiuddin, S. (2016). The patient was treated with leuprolide acetate (25 mg every three months), behavioural therapy (3-4 times per week), and was monitored in a community setting.

10. Coskun, M., & Mukaddes, N. M. (2008). The patient, a 13-year-old boy with an ASC and inappropriate sexual behaviour was treated with mirtazapine (15 mg/day) for 10 weeks to address his fetishist behaviour. As part of the intervention and treatment, the patient's parents were encouraged to monitor the frequency and severity of his behaviour.

11. Coskun, M., Karakoc, S., Kircelli, F., & Mukaddes, N. M. (2009). Eight participants were involved an 8-week treatment with mirtazapine. The initial dosage was 7.5-15 mg/day, which was increased to a maximum of 30 mg/day. Participants were monitored every three weeks for efficacy and side effects of the medication. Parents were encouraged to monitor inappropriate sexual behaviour at home for frequency and duration. Clinical interviews with parents and video observations were used to determine the characteristics, severity, frequency, duration, and impact of ISB on the child's adaptive functioning. Clinical Global Impressions-Severity (CGI-S) scales and Clinical Global Impressions-Improvement (CGI-I) scales were administered at the beginning and conclusion of the intervention.

# 12. Nguyen, M., & Murphy, T. (2001).

A behavioural intervention was attempted with the patient, a 13-year-old male with an ASC who engaged in excessive self-harming masturbation in private and public spaces. The initial intervention involved redirection and distraction, but it did not result in treatment success. The researchers then moved to a pharmacological intervention with mirtazapine.

Study	Intervention	Intervention Details
Shenk, C. and Brown, A. (2007)	Group and individual CBT, ERP, residential program	Daily group therapy, weekly individual psychotherapy, 45-week structured residential program
Thompson, A.R. and Beail, N. (2002)	Staged intervention procedure	Desensitization using models, teaching appropriate masturbation, home practice with monitoring
Pritchard, D., et al. (2016)	Multi-component behavioural intervention	Points and level system, active support, CBT, sex and relationship education, offense-specific intervention, behavioural contract
Visser, K., et al. (2017)	Tackling Teenage Training (TTT) program	Psychoeducation and communicative skills practice related to puberty, sexuality, and intimate relationships
Griffin- Shelley., E. (2010)	CBT, group therapy, psychoeducation, relapse prevention, individual therapy	Lengthy assessment, group therapy, psychoeducation, relapse prevention, individual therapy, residential and community treatment
Ray, F., Marks, C., & Bray- Garretson, H. (2004)	Residential multidisciplinary treatment (MDT) package	CBT, narrative elements, family/carers involvement, direct care staff education
Deepmala & Agrawal (2014)	Propranolol therapy	Prescribed low-dose propranolol (0.3 mg/kg/d, or 10 mg twice daily) at a psychiatric clinic; self-report and parent-reported scales; diary of hypersexual behavior; blood pressure and heart rate monitoring during monthly clinic visits
Kohn et al. (1998)	Pharmacotherapy, psychotherapy, and family therapy	Residential treatments; pharmacotherapy including levopromazine, lithium, carbamazepine, propanol, and cyproterone acetate; psychotherapy and family therapy
Fosdick & Mohiuddin (2016)	Leuprolide acetate therapy and behavioural therapy	Leuprolide acetate (25 mg every three months); behavioural therapy (3-4 times per week); monitoring in a community setting.
Coskun & Mukaddes (2008)	Mirtazapine therapy	Mirtazapine (15 mg/day) for 10 weeks to address fetishist behavior; parental monitoring of frequency and severity of behavior.
Coskun et al. (2009)	Mirtazapine therapy	8-week treatment with mirtazapine (7.5-15 mg/day initially, increased to max 30 mg/day); monitoring every three weeks for efficacy and side effects; parental monitoring of inappropriate sexual behavior at home; Clinical Global Impressions-Severity (CGI- S) scales and Clinical Global Impressions- Improvement (CGI-I) scales administered at start and end.
Nguyen & Murphy (2001)	Behavioural intervention and mirtazapine therapy	Behavioural intervention involving redirection and distraction (unsuccessful); pharmacological intervention with mirtazapine.

Table 9. Description of interventions for the treatment of HSBs in autistic adolescents.

#### Intervention outcomes

Most articles reported on the success of the intervention with autistic adolescents for the treatment of their HSBs. Authors reported that the intervention and treatment for HSBs among this cohort led to a reduction in both the behaviour and the risk of the outcomes of the behaviour (e.g., a reduction in arousal and masturbation and a reduction in recidivism), as well as success in the patient's transition or integration back into the private and/or public setting.

In addition to a reported reduction in the problematic or harmful behaviour, authors reported a series of improvements to other outcomes including, improved social responsiveness, higher psychosexual knowledge, increased flexibility in thinking (i.e., less rigidity in thinking pattern and style as associated with ASC), acknowledgement of the need to regulate urges, improved social relatedness, and better sleep.

For interventions including pharmacological therapy as either sole or in-part treatment for the HSBs of autistic adolescents, the behaviours re-emerged as per baseline at cessation of treatment but were reduced again once treatment was re-administered.

A summary of the study intervention outcomes is provided below. Following this, Table 10 provides an overview of the intervention outcomes for autistic adolescents and HSBs. The outcomes of various interventions and treatments for autistic adolescents and HSBs are summarised as follows:

#### 1. Shenk, C., & Brown, A. (2007).

Data were collected using the J-SOAP-II and a time-series design. Results showed that self-monitoring and restructuring had no impact on arousal or the use of deviant fantasies for masturbation. However, a reduction in arousal and masturbation was observed once ERP commenced. These improvements generalized to the family home and were maintained over a 6-month follow-up period, along with a decrease in the risk of re-offending. Upon reassessment at week 46, the participant was deemed safe to return to his family home, with the risk of sexual recidivism reduced from 52% before treatment to 33% at discharge. Three months later, the J-SOAP-II re-administered assessment showed a further reduction in recidivism risk to 25%. The participant self-reported a decrease in masturbating to deviant fantasies. At the 6-month follow-up, the J-SOAP-II results remained at 25% recidivism risk, with the participant reporting consistently low masturbation frequency and denial of masturbating to deviant fantasies. Anecdotally, the participant showed better identification of arousal antecedents, improved differentiation between deviant and non-deviant fantasies, increased emotional expression and empathy in individual sessions, developed more appropriate ways to connect with others, and successfully reintegrated into his family and community.

#### 2. Thompson, A. R., & Beail, N. (2002).

The study did not find that behavioural interventions eliminated auto-erotic asphyxiation, as the participant continued to engage in the behavior. The authors noted a reduction in the dangerousness of the behavior, although they could not objectively define or measure the dangerousness or severity of the masturbatory

behavior. Some generalisations to masturbatory behaviours occurred, but this progress was considered extremely slow.

# 3. Pritchard, D., et al. (2016).

Data on pro-social and academic behavior were collected every 30 minutes during the school day, while data on problem behavior were recorded 24/7 via critical incident reports. Measures included the incidence of absconding and aggression, which remained low; harmful/inappropriate sexual behavior, which reduced over the course of admission; and a progressive increase in community visits. Within the first 12 weeks, there were 16 episodes of harmful/inappropriate sexual behavior. Between weeks 46 and 66 of the intervention, a relapse in problem behavior occurred, following access to a tablet computer, with sexual behavior increasing from 0 to 4 times per week. After implementing the behavioural contingency contract in week 66, no incidents of sexual behavior were reported in the subsequent three weeks. Between weeks 69 and 87, four episodes of sexual behavior were recorded, while none were reported in the last 36 weeks of the study. The authors discussed the benefits of intensive, long-term multi-component behavioural treatment in residential settings for individuals with Autism Spectrum Condition (ASC) who exhibit sexually harmful behaviours. Anecdotally, the participant began to openly discuss his offense and its causes, demonstrated a more respectful and appropriate demeanour with staff, family, and peers, and successfully transitioned to supported living after discharge.

# 4. Visser, K. et al. (2017).

The results showed that all adolescents, regardless of their condition, significantly improved in social responsiveness and decreased problematic sexual behavior over time. The TTT program was most effective for younger adolescents with ASD, as it led to higher psychosexual knowledge and improved social functioning. The study concluded that the TTT program is an effective psychoeducational tool for preparing adolescents with ASD for healthy psychosexual development. Further research is needed to explore how this increased knowledge and insight can improve romantic skills and prevent the development of problematic sexual behavior and victimization.

# 5. Griffin-Shelley, E. (2010).

The treatment initially started as residential for three years and then continued as community treatment. The adolescent reported engaging in masturbation and accessing pornography. The SRS questionnaire was used to assess potential changes in social functioning, and although there was a possible reduction in the frequency of recidivism behaviours, treatment ended prematurely, and the client continued to display lying and deception. The author suggested using an addiction model of treatment instead of an offender model, and positive changes were observed during community aftercare, although difficulties with making and maintaining friends continued.

# 6. Ray, F., Marks, C., & Bray-Garretson, H. (2004).

On the effectiveness of intervention across the four case studies, anecdotal evidence reported by the authors suggests that the intervention led to increased flexibility in thinking, more fluid affect, trying new ways of affect regulation, acknowledgment of the need to regulate urges, and acceptance of responsibility. They used the Sex Problems scale of the Child Behavior Checklist (CBCL) to determine changes in

psychosexual problems. The authors reported improvements awareness of the need for management strategies, flexibility, and willingness of the individuals to try new things, observed stabilization of behavior, and emotional regulation skills.

# 7. Deepmala, D & Agrawal, M. (2014).

The client was prescribed low-dose propranolol (0.3 mg/kg/d, or 10 mg twice daily) at a psychiatric clinic. The patient's mother and school staff were asked to keep a diary of the child's hypersexual behavior, and his blood pressure and heart rate were monitored during monthly clinic visits. Initially, the school reported 70 incidents of hypersexual behavior in a 5-day school week. However, after two weeks of propranolol treatment, the number of incidents decreased to 20 per week, and after three months, only one incident was reported in a two-month period. Hypersexual behaviours also decreased at home, but persisted when the child was alone in his bedroom. The medication also helped reduce his pacing behavior. Three months later, the propranolol prescription was not filled for about two weeks,

Inree months later, the propranolol prescription was not filled for about two weeks, during which the mother noticed a clear increase in hypersexual behaviours and pacing, with nearly 50 incidents in a 5-day school week. After resuming propranolol treatment, these behaviours decreased again. The patient continued propranolol therapy for one year at the same dose, along with the same risperidone dose for his history of physical aggression. No side effects of propranolol were reported during this treatment duration.

# 8. Kohn, Y., Fahum, T., Ratzoni, G., & Apter, A. (1998).

The patient underwent a series of residential treatments, with a focus on pharmacotherapy, including levopromazine, lithium, carbamazepine, propanol, and cyproterone acetate. Psychotherapy and family therapy were also provided. Anecdotal evidence suggested that hospital admissions alone did not result in significant changes in the patient's behavior. However, the introduction of a beta-blocker in combination with an antiandrogen led to a substantial improvement in his harmful sexual behavior (HSB).

9. Fosdick, C., & Mohiuddin, S. (2016).

The patient was treated with leuprolide acetate (25 mg every three months), behavioural therapy (3-4 times per week), and was monitored in a community setting. Anecdotal evidence indicated that a reduction in sexual aggression occurred only during leuprolide acetate use, which lasted for four years. During a gap in medication, problematic behavior reoccurred. Once the treatment regimen was resumed, no incidents were reported for three years. Side effects observed included loss of libido, overeating, weight gain, food-based perseverations, and high cholesterol.

10. Coskun, M., & Mukaddes, N. M. (2008).

The patient was treated with mirtazapine (15 mg/day) for 10 weeks to address his fetishist behavior. Datum were collected over a 5-month period, though further details about the measures were not provided. The patient's parents were encouraged to monitor the frequency and severity of his behavior. After the introduction of mirtazapine, the fetishist behavior ceased but re-emerged once the treatment was stopped. No follow-up data was undertaken.

11. Coskun, M., Karakoc, S., Kircelli, F., & Mukaddes, N. M. (2009).

An 8-week treatment with mirtazapine with an initial dosage of 7.5-15 mg/day, which was increased to a maximum of 30 mg/day. Participants were monitored every three weeks for efficacy and side effects of the medication. Parents were encouraged to monitor inappropriate sexual behavior (ISB) at home for frequency and duration. A significant difference was observed between the CGI-S scores at baseline and final assessment. Five participants showed "very much improvement," three showed "much improvement," and one showed "moderate improvement" in excessive masturbation as measured on the CGI-I scale. Six out of ten participants also demonstrated improvement in other ISB. Parents reported less time spent in ISB, with three participants' ISB almost disappearing, two participants' ISB decreasing from an entire day to a few hours, and four participants resuming their educational programs. Follow-up and generalization data were not undertaken.

### 12. Nguyen, M., & Murphy, T. (2001).

Initially, a behavioural intervention was attempted, involving redirection and distraction, but it did not result in treatment success. The researchers then moved to a pharmacological intervention with mirtazapine, which proved successful.

The patient was eventually discharged after nearly 6 months on the mental health unit, with a prescription for olanzapine (2.5 mg) and mirtazapine (15 mg) twice a day. At discharge, he appeared calmer and less agitated. The frequency of his nightly masturbation improved from almost every night to two or three times per week, and he no longer engaged in public displays of masturbation. He slept better, although he experienced increased hunger. His level of social relatedness also improved. Both the patient's parents and the staff agreed that the target symptoms observed before hospitalization were much improved at discharge.

Authors	Intervention / Treatment	Outcomes
Shenk & Brown (2007)	ERP therapy	Significant reduction in arousal, masturbation, and recidivism risk; successful reintegration
Thompson & Beail (2002)	Behavioural interventions	Reduced dangerousness of auto-erotic asphyxiation; did not eliminate behavior
Pritchard et al. (2016)	Long-term multi- component behavioural treatment	Reduced harmful/inappropriate sexual behavior; successful transition to supported living
Visser et al. (2017)	TTT program	Improved social responsiveness, decreased problematic sexual behavior, higher psychosexual knowledge
Griffin-Shelley (2010)	Residential and community treatment	Positive changes during community aftercare; struggled with making and maintaining friends
Ray et al. (2004)	Intervention across four case studies	Increased flexibility in thinking, affect regulation, and acknowledgment of the need to regulate urges
Deepmala & Agrawal (2014)	Low-dose propranolol treatment	Significant decrease in hypersexual behaviours

Table 10. Summary of intervention outcomes for autistic adolescents and HSBs.

Kohn et al. (1998)	Beta-blocker and antiandrogen medication	Substantial improvement in harmful sexual behavior
Fosdick & Mohiuddin (2016)	Leuprolide acetate treatment and behavioural therapy	Reduced sexual aggression
Coskun & Mukaddes (2008)	Mirtazapine treatment	Stopped fetishist behavior; behavior re- emerged once treatment stopped
Coskun et al. (2009)	Mirtazapine treatment	Significant improvement in excessive masturbation and other inappropriate sexual behaviours
Nguyen & Murphy (2001)	Mirtazapine and olanzapine treatment	Reduced frequency of masturbation, improved social relatedness, better sleep

# Description of the professionals involved in the intervention of autistic adolescents and HSBs

The studies included in this REA involved various professionals to administer interventions and treatments for the autistic adolescents and HSBs. These professionals included cognitive-behavioural therapists, multidisciplinary teams consisting of psychologists and general practitioners and health professionals, trained staff at residential special schools, professionals with bachelor's or master's degrees in psychology or social services experienced in working with clients with an autism spectrum disorder, psychiatrists, and behaviour analysts. These professionals included in the interventions administered them in diverse settings such as residential treatment facilities, outpatient settings, community settings, patient's homes, special schools, and psychiatric clinics.

Study	Intervention Administrators
Shenk & Brown	Cognitive-behavioural therapist in a residential treatment facility
(2007)	
Thompson & Beail	Multidisciplinary team (general practitioner, psychologists, other health
(2002)	professionals) in outpatient setting & patient's home
Pritchard et al.	Trained staff at a residential special school
(2016)	
Visser et al. (2017)	Professionals (bachelor's/master's in psychology/social services) with
	experience working with clients with an ASD
Griffin-Shelley	Therapists using a cognitive-behavioural therapy (CBT) approach
(2010)	
Ray et al. (2004)	Therapists using CBT, working with family, caregivers, and direct care staff
Deepmala &	Psychiatrist at a psychiatric clinic
Agrawal (2014)	
Kohn et al. (1998)	Team of professionals, including psychiatrists
Fosdick &	Psychiatrist and behaviour analyst
Mohiuddin (2016)	
Coskun &	Psychiatrist
Mukaddes (2008)	
Coskun et al. (2009)	Team of psychiatrists

Table 11. Professionals involved in interventions for autistic adolescents and HSBs

Nguyen & Murphy	Psychiatrist in a clinical child mental health unit
(2001)	

#### Discussion

This REA aimed to identify and examine the effectiveness of interventions for addressing HSBs in autistic adolescents. The studies included in this review provided evidence for a range of interventions, including pharmacological treatments, cognitive-behavioral therapy, and other psychotherapeutic approaches.

The studies highlight the complexity and diversity of HSBs among autistic adolescents. The findings emphasise the importance of tailored interventions to address the specific challenges and needs of this cohort, including cognitivebehavioural therapy, psychoeducation, and communication skills training.

A common component across the interventions is the utilization of cognitivebehavioural therapy (CBT) as a primary treatment approach. Psychotherapeutic interventions, such as cognitive-behavioral therapy (CBT), also showed potential in addressing HSBs in autistic adolescents (e.g., Ray et al., 2004). CBT has been shown to be effective in reducing HSBs and improving emotional communication, empathy, and relapse prevention in a range of other groups such as those with developmental disabilities and including autistic adolescents and children with autism spectrum disorders (Atwood, 2003; Ho et al., 2014; Hronis, 2022). However, the small number of case studies identified for this REA and the lack of controlled trials make it difficult to draw firm conclusions about the effectiveness of these approaches for autistic adolescents and HSBs.

The studies also underscore the significance of psychoeducation in addressing HSBs among autistic adolescents but for those without an intellectual disability or who are non-verbal. The Tackling Teenage Training (TTT) program, for instance, was found to be effective in a group of 'high functioning' autistic adolescents, improving psychosexual knowledge and social functioning and greater insight and awareness of the self and of certain potential problematic behaviours. This highlights the potential value of psychoeducational interventions in promoting healthy psychosexual development and preventing the potential emergence of HSBs in certain autistic adolescents.

Pharmacological interventions such as propranolol, leuprolide acetate, and mirtazapine therapy appeared to be a potentially useful approach for managing HSBs in certain autistic adolescents. In these studies, in this REA, these were often individuals with comorbid diagnoses such as intellectual disability, hyperactivity, irritability, ADHD, aggressive behavior, and major depression.

Several studies have shown positive effects in reducing HSBs in some autistic individuals, with varying degrees of success. Successful outcomes are reported with the use of medications such as mirtazapine (Coskun & Mukaddes, 2008; Coskun et al., 2009; Nguyen & Murphy, 2001), propranolol (Deepmala & Agrawal, 2014), leuprolide acetate (Fosdick & Mohiuddin, 2016), and a combination of beta-blockers and antiandrogens (Kohn et al., 1998). These interventions have shown some success in reducing the frequency and severity of HSBs, improving social relatedness, reducing aggression, and reducing agitation in participants.

It is important to note, however, that most of these studies were based on anecdotal single case reports or small samples. They also included a lack of experimental design, unclear outcome measures, and lack of follow-up data. Further research with larger sample sizes and more rigorous experimental designs is needed to confirm the effectiveness of these interventions with this cohort, as currently, the generalisability of their findings is limited. It would be beneficial to investigate the long-term effects of these pharmacological interventions, as well as any potential side effects or interactions with other medications.

In several instances, a combination of pharmacological and nonpharmacological interventions seemed to produce better outcomes, as evidenced by the study by Kohn et al. (1998), where a combination of beta-blockers and antiandrogens along with psychotherapy led to a substantial reduction in harmful sexual behavior. Additionally, future research might explore the role of combined interventions, such as pharmacological treatment alongside behavioural therapy or family therapy, to determine if a multimodal approach could yield better outcomes for adolescents with ASC and HSBs.

A significant and key limitation in the current literature is the lack of experimental designs, including randomized controlled trials, which would provide more robust evidence for the efficacy of the interventions. Additionally, many studies did not provide detailed information on the measures used to assess changes in HSBs, and there was a lack of inter-observer agreement, follow-up data, and generalisation data among several studies.

In addition, from the samples of adolescents in study interventions, most were recorded as being white and male. This finding highlights the paucity of knowledge on the topic and with females with an ASC and HSBs. It also highlights the limited knowledge of cultural context and autistic adolescents. Further research addressing these limitations is necessary to draw more definitive conclusions about the effectiveness of interventions for HSBs in autistic adolescents, including those more diverse groups including those who are female and from backgrounds other than 'white'.

Noteworthy, the studies suggest the importance of involving families, caregivers, and direct care staff in the treatment process. A supportive and consistent environment is crucial for the effectiveness of interventions for autistic adolescents, as it ensures the continuity of care and fosters generalisation of skills to real-life situations. Training for direct care staff to better understand the motivations behind HSBs amongst this cohort and develop appropriate strategies to address them is also crucial.

Lastly, it is important to consider the ethical implications of treating HSBs in autistic adolescents, particularly when using medications that may have potential side effects or impact an individual's overall well-being. Future research should include thorough ethical consideration and informed consent processes to ensure the rights and well-being of the participants are protected. Several studies identified in this REA did not report on ethics or consent processes when intervening and treating this cohort and including those with intellectual disability or 'severe' autism. Within the academic peer-reviewed research literature, there is preliminary evidence to suggest that pharmacological treatments and psychotherapeutic approaches, either alone or in combination, may be beneficial in managing HSBs in autistic adolescents. The effectiveness of these interventions, however, is highly individualised and dependent on the specific needs and circumstances of each adolescent with an ASC and the specific HSBs in which they engage or display.

Overall, the findings from this REA suggest that the management of HSBs in autistic adolescents requires a comprehensive and individualised approach, and that consideration is given to incorporating pharmacological, psychotherapeutic, and behavioral interventions. Active collaboration between clinicians, families, caregivers, and direct care staff is suggested to be important to ensure the successful implementation of these interventions and to promote the well-being of autistic adolescents.

#### Further research

The findings from this REA suggest that further research using more rigorous methodologies is needed to establish the effectiveness and safety of these interventions, as well as to determine the optimal treatment approach for individuals with HSBs and varying presentations of ASC as a non-homogeneous neuro-developmental condition with heterogeneity in behavioural presentations (Walker, 2014; Xavier et al., 2015). In addition, further research might explore the potential role of family and caregiver involvement in the treatment process, as well as the training of direct care staff to better understand and address the underlying motivations behind these behaviours in autistic adolescents [Russell et al., 2023).

Although the studies reviewed in this REA provide some insight as to the impact of interventions for autistic adolescents and HSBs, there are still significant gaps in our understanding of how to effectively address these issues. Therefore, we suggest that further research should focus on the following areas:

- 1. Develop more comprehensive and standardised assessment tools. These are needed to better understand the specific needs and challenges of this population, as well as to measure the effectiveness of interventions.
- Conduct randomised controlled trials of interventions: Although the case studies and single case designs reviewed here provide anecdotal evidence of intervention effectiveness, future research should use randomised controlled trials to establish evidence-based treatments for autistic adolescents and HSBs. This would provide a more robust basis for clinical and educational decision-making and contribute to the development of effective and tailored interventions.
- 3. *Identify effective pharmacological treatments*: Although several studies have examined the use of pharmacological treatments for HSB, the literature in this area is still limited. Future research should investigate the efficacy of pharmacological treatments for adolescents with ASC and HSB, with a focus on identifying potential side effects and optimal dosing regimens and with consideration for the rights of autistic individuals.

- 4. *Develop tailored interventions:* Autistic adolescents and HSB present unique and diverse needs, and interventions must be tailored to meet these specific requirements. Therefore, future research should focus on developing interventions that are tailored to the individual's needs, including addressing family dynamics, developing specific management strategies, and monitoring progress.
- 5. Examine the long-term outcomes: Although many studies reviewed here report short-term improvements in HSB, there are limited data on the long-term outcomes of these interventions. Future research should examine the long-term effectiveness of interventions, including monitoring progress over several years and assessing the impact of interventions on the individual's adaptive functioning.
- 6. *Identify risk and protective factors*: Further research is needed to identity factors that influence the risk of the development of HSBs in autistic adolescents that could inform the design of preventive interventions.
- 7. *Evaluate the long-term effectiveness of interventions:* Evidence is needed in how effective interventions are in reducing HSBs over time and preventing recidivism, including the potential role of booster sessions and follow-up support.
- 8. *Examine the effectiveness of different intervention components:* Different components (e.g., CBT, ERP, psychoeducation) in isolation and in combination should be assessed, to determine the most effective treatment modalities for addressing HSBs in this population.
- 9. *Investigate potential moderators and mediators:* Treatment effectiveness may be affected by factors such as age, gender, cognitive ability, and comorbid mental health conditions.Reseach examining these factors can assist with better understand the contributors to successful intervention outcomes.
- 10. *Investigate the impact of co-occurring disorders:* Many autistic adolescents and HSB also present with co-occurring mental health disorders, including anxiety, depression, and ADHD. Future research should investigate how these co-occurring disorders impact the effectiveness of interventions for HSB, and how interventions can be adapted to address these additional challenges.

Overall, the findings from this REA suggest that these research areas should be a focus for future studies, to build on the knowledge base provided by the studies reviewed here and to develop effective and tailored interventions for autistic adolescents and HSBs.

# Implications for Practice

The findings from the reviewed studies, albeit preliminary and of low quality evidence, have several implications suggested for practice in managing HSBs in

autistic adolescents. Clinicians and practitioners might consider the following points when developing intervention and treatment plans for autistic adolescents and HSBs:

- 1. *Individualised treatment plans:* Given the diversity of HSBs and the unique challenges faced by autistic adolescents, it is essential to develop individualised treatment plans that cater to each adolescent's specific needs and strengths. Treatment approaches should be adapted to address the cognitive, behavioural, and emotional aspects of the individual's autism and sexual behavior.
- 2. Multidisciplinary and comprehensive approaches: A multidisciplinary approach involving psychologists, therapists, educators, social workers, and family members may provide the necessary support and consistency in addressing HSBs amongst this cohort. Interventions should be comprehensive, combining various evidenced-based therapeutic techniques such as cognitive-behavioural therapy (CBT), exposure and response prevention (ERP), sex and relationship education (SRE), and offense-specific interventions, where required. The interventions identified in this review suggest that a multidisciplinary approach combining pharmacological treatments, psychotherapy, and behavioral interventions may be most effective in addressing HSBs in autistic adolescents. However, further research is needed and clinicians should work closely with a team of professionals, including psychiatrists, psychologists, and behavioural specialists, to develop comprehensive and tailored treatment plans for each individual.
- 3. Focusing on psychoeducation and social skills development: Programs like Tackling Teenage Training (TTT) (Visser et al., 2017) have shown positive results in enhancing psychosexual knowledge and improving social functioning among autistic adolescents. Psycho-education and social skills training should be integrated into treatment plans to prepare adolescents for healthy psycho-sexual development and to potentially contribute to the prevention of the occurrence of HSBs.
- 4. *Psychotherapeutic interventions*: Cognitive-behavioral therapy (CBT) and other evidenced-based psychotherapeutic approaches are most likely to be beneficial to address HSBs in autistic adolescents. Clinicians should assess the patient's cognitive and language abilities to determine the appropriateness of these interventions and adapt the therapy to the individual's needs and strengths.
- 5. *Pharmacological interventions:* Medications such as mirtazapine, propranolol, and leuprolide acetate have shown promise, albeit with varying degrees of success in reducing HSBs in autistic adolescents. Clinicians should carefully consider the potential benefits and risks of these medications, considering the severity of the HSB, the patient's medical history, and possible interactions with other medications.
- 6. *Family and caregiver involvement*: The involvement of family members and caregivers in the treatment process can be crucial for maintaining consistency in the intervention and ensuring long-term success. Clinicians should provide

education and support to families to help them better understand the unique challenges faced by autistic adolescents and HSBs and to develop effective strategies for managing the HSBs at home and in the community.

- 7. *Staff training and awareness*: Direct care staff and professionals working with autistic adolescents and HSBs should receive specialised training to understand the motivations behind the HSBs and to develop appropriate strategies to address them. Increased awareness and understanding of the unique challenges faced by this cohort can improve the quality and effectiveness of the treatment provided. This may involve collaboration between clinicians, educators, and other professionals working with the adolescents.
- 8. *Cultural sensitivity*: Practitioners should be aware of the cultural context in which their clients are embedded and adapt their interventions accordingly. Developing culturally responsive interventions and incorporating the perspectives of autistic individuals and their families from diverse backgrounds can enhance the acceptability and effectiveness of treatment approaches.
- 9. *Monitoring and long-term follow-up:* Continuous monitoring of progress is essential to ensure the effectiveness of the treatment and to make necessary adjustments in the intervention. Long-term follow-up is crucial to assess the maintenance of treatment gains and to provide ongoing support as needed. Clinicians should collaborate with families, caregivers, and direct care staff to assess changes in HSBs and adjust treatment plans as needed.
- 10. *Ethical considerations*: When designing and implementing interventions for autistic adolescents and HSBs, it is important to consider the ethical implications of the treatment, such as placing individuals with obvious psychosexual issues on a waiting list. Ensuring that interventions prioritise the safety and well-being of the adolescent and others involved is crucial.
- 11. *Further research:* The current evidence base for interventions addressing HSBs in autistic adolescents is very limited. Clinicians should stay informed about ongoing research in this area and be prepared to integrate new findings into their practice as the evidence base grows.

By incorporating these implications into practice, professionals can better address the complex needs of autistic adolescents and HSBs and support their healthy psychosexual development and social functioning.

# Implications for current HSB interventions – adaptation of program approaches for autistic adolescents

Several programs and interventions (e.g., *Turning Corners*) are designed to address and prevent harmful sexual behaviours among young people [Campbel et al., 2020; Meiksans et al., 2017; Quadara et al., 2020]. These programs can be educational, therapeutic, or community-based and often focus on promoting healthy relationships, improving communication skills, and fostering self-awareness.

Treatment and support for individuals who engage in harmful sexual behaviours may involve therapy, support groups, or medical intervention, depending on the specific circumstances and the severity of the behaviour.

Based on the findings in this REA, we suggest some current intervention and program components to support autistic adolescents who are at risk of engaging in HSBs, and how some of these might be adapted and tailored to the adolescents' unique needs and challenges. Some suggestions include:

- *Comprehensive sex education:* Providing age-appropriate, evidence-based sexual education to young people can help them develop a healthy understanding of sexuality, consent, and relationships. These programs teach about safer sex practices, consent, emotional regulation, and communication skills, among other topics.
- Adapted sex education and social skills training: Providing comprehensive, age-appropriate, and autism-specific sex education can help autistic adolescents understand healthy relationships, boundaries, and consent. This education should be presented in a way that is accessible and easily understood by autistic individuals. Social skills training can help autistic adolescents develop essential skills for understanding and navigating social situations, including those related to sexual interactions. This training can involve learning to read social cues, understanding body language, and practicing appropriate ways to express affection or interest.
- *Cognitive-behavioural therapy (CBT):* CBT is an evidence-based therapeutic approach that can help young people identify and modify harmful thought patterns and behaviours. CBT can be adapted to address specific issues related to harmful sexual behaviours, such as impulse control, empathy development, and understanding the consequences of one's actions.
- *Multimodal Therapy:* The program emphasizes the integration of pharmacological and non-pharmacological interventions to achieve optimal outcomes. This may include a combination of beta-blockers, antiandrogens, psychotherapy, cognitive-behavioural therapy (CBT), exposure and response prevention (ERP), and family therapy, as deemed appropriate for each individual.
- *Family therapy:* Family therapy can help address family dynamics and communication issues that may contribute to HSBs. It can also provide support for parents and caregivers in establishing boundaries and fostering healthy relationships within the family.
- Adapted individual or family therapy: Therapy can be beneficial for autistic adolescents and their families, addressing issues related to HSBs, communication, and family dynamics. Therapists experienced in working with individuals with ASCs can help develop strategies to manage and prevent harmful sexual behaviours.

- *Group therapy:* Group therapy, often facilitated by a mental health professional, can help young people share their experiences, learn from their peers, and develop healthier coping mechanisms. Group therapy can address various issues, including harmful sexual behaviours, emotional regulation, and interpersonal skills.
- *Mentorship programs:* Mentorship programs can provide young people with positive role models and guidance to help them navigate challenges and develop healthy relationships. Mentors can support and encourage young people to make better choices and engage in positive behaviours.
- Adapted mentorship or support groups: Support groups for autistic adolescents and their families can provide a safe space to discuss challenges, share experiences, and learn from one another. These groups can help autistic adolescents understand the consequences of their actions and develop healthier behaviours.
- Community-based or collaborative programs: Community-based programs can provide resources, education, and support for young people and their families. These programs may involve collaboration between schools, law enforcement, social services, and mental health professionals to identify and address the needs of young people at risk of engaging in harmful sexual behaviours.
- Adapted community-collaborative approach: Involving a multidisciplinary team of professionals, such as therapists, educators, and medical providers, can help create a comprehensive plan to address HSBs in autistic adolescents. This approach should involve ongoing communication and coordination among team members.
- *Restorative justice programs:* Restorative justice programs focus on repairing harm caused by harmful sexual behaviours and fostering empathy, accountability, and personal growth. These programs may involve victim-offender mediation or community-based interventions that emphasise healing and responsibility.

# A Comprehensive Multimodal Intervention for Autistic adolescents and HSBs

Based on the findings from this REA, we suggest the following evidence base program for the treatment of autistic adolescents and HSBs: A Comprehensive Multimodal Intervention for Autistic adolescents and HSB program aims to provide a holistic approach to treating autistic adolescents and HSBs by combining multiple evidence-based treatment modalities. This program is designed for social workers, psychologists, therapists, educators, and family members to work together as a multidisciplinary team, ensuring consistent and effective support for autistic adolescents and HSB.

#### Program Components:

*Multimodal Therapy:* The program emphasises the integration of pharmacological and non-pharmacological interventions to achieve optimal outcomes. This may include a combination of beta-blockers, antiandrogens,

psychotherapy, cognitive-behavioural therapy (CBT), exposure and response prevention (ERP), and family therapy, as deemed appropriate for each individual.

*Individualized Treatment Plans:* Clinicians will collaborate with a team of professionals, including psychiatrists, psychologists, and behavioural specialists, to develop comprehensive and tailored treatment plans for each adolescent. These plans will take into account the unique needs and circumstances of the individual, ensuring a personalized approach to treatment.

Sex and Relationship Education (SRE): The program incorporates SRE to promote healthy sexual behaviour, understanding of consent, and the development of appropriate social and romantic relationships. This component aims to reduce the risk of reoffending and improve overall social functioning.

*Offense-Specific Interventions:* When required, offense-specific interventions will be implemented to address the behaviours and underlying factors related to the individual's HSBs. This may include targeted therapies, risk management strategies, and ongoing monitoring to prevent recidivism.

*Family Involvement:* Recognising the importance of family support in the treatment process, the program encourages active participation from family members. This involvement can include attending family therapy sessions, participating in psychoeducational workshops, and providing a consistent and supportive environment for the adolescent.

Ongoing Evaluation and Research: The program is committed to continuous improvement through ongoing evaluation and research. This includes monitoring treatment outcomes, refining intervention strategies, and staying informed about the latest developments in the field of ASC and HSB interventions. This commitment ensures that the program remains at the forefront of best practice and delivers the most effective and up-to-date treatment approaches for autistic adolescents and HSBs.

*Training and Professional Development:* The program also emphasizes the importance of ongoing training and professional development for all team members involved in the care of adolescents with ASC and HSBs. This ensures that clinicians, social workers, educators, and therapists are equipped with the necessary knowledge and skills to provide the highest quality of care to their clients.

By combining various evidence-based therapeutic techniques in a multidisciplinary and comprehensive approach, the Comprehensive Multimodal Intervention for Autistic adolescents and HSBs program aims to improve treatment outcomes, reduce the risk of reoffending, and support adolescents and their families in navigating the complex challenges associated with ASC and HSB.

In summary, it is essential to create a supportive environment for young people at risk of engaging in HSBs. Given some of the unique presentations and challenges for autistic adolescents, early intervention and support are considered as especially pertinent for this group who are at risk of or who engage in HSBs. This is to access appropriate resources to reduce the likelihood of these behaviours becoming chronic or escalating in severity. By addressing their unique needs and challenges, these individuals can develop a better understanding of healthy relationships, boundaries, and appropriate sexual behaviours.

#### Conclusion

The growing body of research on the management of HSBs in autistic adolescents highlights the complexity of this issue and the importance of a comprehensive approach to treatment. The studies we reviewed in this REA demonstrate the potential benefits of cognitive-behavioural therapy (CBT), pharmacological interventions, family involvement, and multidisciplinary team approaches in addressing HSBs among autistic adolescents.

From the studies included in this REA, cognitive-behavioural therapy has been shown to be effective in a small group of case studies in treating sexually abusive behaviours in this population, addressing maladaptive thoughts and behaviours, and promoting adaptive coping strategies (e.g., Griffin-Shelley, 2010; Ray et al., 2004). However, further research is needed to examine the long-term treatment effectiveness of CBT and to determine the optimal treatment duration and intensity for autistic individuals, however, this is likely to remain highly individualised.

Pharmacological interventions have demonstrated promise in reducing the frequency and intensity of HSBs among autistic adolescents. Although several medications, including mirtazapine, propranolol, and leuprolide acetate, have been used, with varying levels of success, in the management of HSBs (Coskun et al., 2009; Deepmala & Agrawal, 2014; Fosdick & Mohiuddin, 2016), more research is required to establish the safety and efficacy of these treatments, especially in the long term (see Gallo et al., 2018) and with adolescents.

Additionally, future studies should explore the comparative effectiveness of different pharmacological agents and the possible benefits of combination therapy. For this REA, we identified a total of four of the included studies (Coskun & Mukaddes, 2008; Coskun et al., 2009; Deepmala & Agrawal, 2014; Nguyen & Murphy, 2001) utilised pharmacotherapy as the sole treatment of HSBs in autistic adolescents. A total of six of the included studies (Griffin-Shelley, 2010; Pritchard et al., 2016; Ray et al., 2004; Shenk & Brown, 2007; Thompson & Beail, 2002; Visser et al., 2017) utilised a range of non-pharmacological interventions to address HSBs in autistic adolescents. The remaining two of the included studies utilised pharmacotherapy (Fosdick & Mohiuddin, 2016; Kohn et al., 1998) alongside other therapeutic modalities.

Family involvement and a multidisciplinary team approach are essential in the management of HSBs in autistic adolescents. By providing a supportive environment, ensuring consistency in addressing behaviours, and facilitating the coordination of various interventions, these approaches can contribute to improved treatment outcomes (e.g., Ray et al., 2004). It is crucial to develop and evaluate family-based interventions and resources that can enhance the capacity of caregivers to support autistic adolescents and HSBs, effectively.

The available literature we reviewed has several limitations, including the scarcity of experimental designs, the absence of direct measures of change in HSBs,

and the lack of follow-up data (Coskun et al., 2009; Coskun & Mukaddes, 2008). Moreover, most studies have focused on male adolescents, which underscores the need for further research on HSBs in autistic females. Future studies should address these limitations by employing more rigorous research designs, incorporating direct measures of HSBs, and conducting long-term follow-up assessments.

Furthermore, research on prevention and intervention in the treatment of HSBs and ASCs should expand to include diverse populations, such as younger children and adults, individuals with varying levels of cognitive and language abilities, and individuals from different cultural backgrounds. This will help to enhance our understanding of the prevalence, presentation, and management of HSBs and ASCs.

In conclusion, the management of HSBs in autistic individuals is a critical area of research and clinical practice. Although existing interventions show promise, further research is needed to refine treatment approaches, establish the long-term effectiveness of interventions, and address the current gaps in the literature. Ultimately, a comprehensive and evidence-based approach to the treatment of HSBs in autistic individuals will contribute to improved outcomes and quality of life for affected individuals, their families and the community.

#### References

\*Denotes REA identified article

- Allely, C. S., & Creaby-Attwood, A. (2016). Sexual offending and autism spectrum disorders. Journal of Intellectual Disabilities and Offending Behaviour, 7(1), 35-51. <u>https://doi.org/10.1108/JIDOB-09-2015-0029</u>
- Atwood, T. (2003). Cognitive Behaviour Therapy in Asperger Syndrome in Adolescence:
   Living with the Ups, the Downs and Things in Between. In L. H. Willey (Author & Ed.),
   Jessica Kingsley Publishers; Illustrated edition (20 February 2003)
- Barends, E., Rousseau, D. M., & Briner, R. B. (Eds.). (2017). CEBMa Guideline for Rapid Evidence Assessments in Management and Organizations, Version 1.0. Center for Evidence Based Management, Amsterdam. Retrieved from www.cebma.org/guidelines/
- Campbell, F., Booth, A., Hackett, S., & Sutton, A. (2020). Young People Who Display
   Harmful Sexual Behaviors and Their Families: A Qualitative Systematic Review of
   Their Experiences of Professional Interventions. *Trauma, Violence, & Abuse, 21*(3),
   456–469. <u>https://doi.org/10.1177/1524838018770414</u>
- Clionsky, L. N., & N'Zi, A. N. (2019). Addressing sexual acting out behaviours with adolescents on the autism spectrum. *Adolescent Psychiatry*, *9*, 129-134. <u>https://doi.org/10.2174/2210676609666190730091304</u>
- \*Coskun, M., & Mukaddes, N. M. (2008). Mirtazapine treatment in a subject with autistic disorder and fetishism. *Journal of child and adolescent psychopharmacology*, *18*(2), 206–209. <u>https://doi.org/10.1089/cap.2007.0014</u>
- \*Coskun, M., Karakoc, S., Kircelli, F., & Mukaddes, N. M. (2009). Effectiveness of mirtazapine in the treatment of inappropriate sexual behaviors in individuals with autistic disorder. *Journal of child and adolescent psychopharmacology*, *19*(2), 203– 206. <u>https://doi.org/10.1089/cap.2008.020</u>
- \*Deepmala, D & Agrawal, M. (2014). Use of propranolol for hypersexual behavior in an adolescent with autism. *The Annals of pharmacotherapy*, *48*(10), 1385–1388. <u>https://doi.org/10.1177/1060028014541630</u>
- Dredge, K. & Rose, J. (2022). Non-pharamacological treatment for individuals with autism spectrum conditions who display harmful sexual behaviour, *International Journal of Developmental Disabilities*. <u>https://doi.org/10.1080/20473869.2022.2028418</u>
- \*Fosdick, C., & Mohiuddin, S. (2016). Case Report: Resolution of Severe Sexual Aggression in a Developmentally Disabled Adolescent During Leuprolide Acetate Use. *Journal of autism and developmental disorders, 46*(6), 2267–2269. <u>https://doi.org/10.1007/s10803-016-2739-z</u>

- Gallo, A., Abracen, J., Looman, J., Jeglic, E., & Dickey, R. (2019). The Use of Leuprolide
  Acetate in the Management of High-Risk Sex Offenders. *Sexual Abuse*, *31*(8), 930–
  951. <u>https://doi.org/10.1177/1079063218791176</u>
- \*Griffin-Shelley., E. (2010). An Asperger's Adolescent Sex Addict, Sex Offender: A Case Study. Sexual Addiction & Compulsivity, (17)1, 46-64. https://doi.org/10.1080/10720161003646450
- Hackett, S (2014). Children and young people with harmful sexual behaviours. London: Research in Practice.
- Hackett, S, Branigan, P and Holmes, D (2019). Operational framework for children and young people displaying harmful sexual behaviours, second edition, London, NSPCC.
- Higgins, J. P. T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., & Welch, V. A. (Eds.). (2022). Cochrane Handbook for Systematic Reviews of Interventions version
  6.3 (updated February 2022). Cochrane. Retrieved from
  www.training.cochrane.org/handbook
- Ho, B. P. V., Stephenson, J., & Carter, M. (2014). Cognitive-Behavioral Approach for Children with Autism Spectrum Disorders: a Meta-Analysis, Review Journal of Autism and Developmental Disorders, 1(1), 18-33. <u>https://doi.org/10.1007/s40489-013-0002-5</u>
- Hronis, A., Roberts, R., Roberts, L. et al. (2022). Cognitive Behavioural Therapy for children and adolescents with intellectual disability and anxiety: a therapist manual. Discov Psychol, 2, 24. <u>https://doi.org/10.1007/s44202-021-00017-z</u>
- Kmet, L.M., Cook, L.S. & Lee, R.C. (2014). Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields. Edmonton: Alberta Heritage Foundation for Medical Research (AHFMR). https://www.ihe.ca/publications/standard-quality-assessment-criteria-for-evaluatingprimary-research-papers-from-a-variety-of-fields
- \*Kohn, Y., Fahum, T., Ratzoni, G., & Apter, A. (1998). Aggression and sexual offense in Asperger's syndrome. *The Israel journal of psychiatry and related sciences*, *35*(4), 293–299.
- Maggio, M. G., Calatozzo, P., Cerasa, A., Pioggia, G., Quartarone, A., & Calabrò, R. S. (2022). Sex and Sexuality in Autism Spectrum Disorders: A Scoping Review on a Neglected but Fundamental Issue. Brain Sciences, 12(11), 1427.
   <a href="https://doi.org/10.3390/brainsci12111427">https://doi.org/10.3390/brainsci12111427</a>
- Mattys, L. (2018). "Hold me tight so I can go it alone": Developmental themes for young adults with autism spectrum disorder. Qualitative Health Research, 28(2), 321–333. https://doi.org/10.1177/1049732317730329

- McLay, L., Carnett, A., Tyler-Merrick, G., & van der Meer, L. (2015). A Systematic Review of Interventions for Inappropriate Sexual Behavior of Children and Adolescents with Developmental Disabilities. Review Journal of Autism and Developmental Disorders, 2(4), 357-373. <u>https://doi.org/10.1007/s40489-015-0058-5</u>
- Meiksans, J., Bromfield, L., & Ey, L. (2017). A Continuum of Responses for Harmful Sexual Behaviours. Australian Centre for Child Protection. Retrieved from <u>https://www.unisa.edu.au/siteassets/episerver-6-files/global/eass/research/accp/acontinuum-of-responses-for-harmful-sexual-behaviours-australian-centre-for-childprotection-april-2018.pdf</u>
- Murrie, D. C., Warren, J. I., Kristiansson, M., & Dietz, P. E. (2002). Asperger's syndrome in forensic settings. *The International Journal of Forensic Mental Health*, 1(1), 59–70. <u>https://doi.org/10.1080/14999013.2002.10471161</u>
- \*Nguyen, M., & Murphy, T. (2001). Mirtazapine for excessive masturbation in an adolescent with autism. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*(8), 868–869. https://doi.org/10.1097/00004583-200108000-00004
- Payne, K., Maras, K., Russell, A. J., & Brosnan, M. J. (2020). Self-reported motivations for offending by autistic sexual offenders. Autism, 24(2), 307-320. <u>https://doi.org/10.1177/1362361319858860</u>
- Petticrew, M., & Roberts, H. (2008). Systematic reviews in the social sciences: A practical guide. John Wiley & Sons.
- \*Pritchard, D., Graham, N., Penney, H., Owen, G., Peters, S., & Mace, F. C. (2016). Multicomponent behavioural intervention reduces harmful sexual behaviour in a 17-yearold male with autism spectrum disorder: A case study. *Journal of Sexual Aggression*, 22(3), 368–378. <u>https://doi.org/10.1080/13552600.2015.1130269</u>
- Quadara, A., O'Brien, W., Ball, O., Douglas, W., & Vu, L. (2020). Good practice in delivering and evaluating interventions for young people with harmful sexual behaviours (Research report). ANROWS. Retrieved from <a href="https://aifs.gov.au/sites/default/files/2022-03/5717-good-practice-delivering-evaluating-interventions-young-people-harmful-sexual-behaviours.pdf">https://aifs.gov.au/sites/default/files/2022-03/5717-good-practice-delivering-evaluating-interventions-young-people-harmful-sexual-behaviours.pdf</a>
- \*Ray, F., Marks, C., & Bray-Garretson, H. (2004). Challenges to Treating Adolescents with Asperger's Syndrome Who are Sexually Abusive. *Sexual Addiction & Compulsivity: The Journal of Treatment & Prevention, 11*(4), 265 285. <u>https://doi.org/10.1080/10720160490900614</u>
- Russell, D. H., Trew, S., Harris, L., Dickson, J., Higgins, D. J., & Walsh, K. (2023). Engaging parents in child-focused child sexual abuse prevention education strategies: A systematic review. © Australian Catholic University 2023.

- Sevlever, M., Roth, M. E., & Gillis, J. M. (2013). Sexual abuse and offending in autism spectrum disorder. Sexual Disability, 31, 189-200. <u>https://doi.org/10.1007/s11195-013-9286-8</u>
- Shadish, W., Cook, T., & Campbell, D. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Mifflin Company.
- \*Shenk, C. and Brown, A. 2007. Cognitive-behavioural treatment of an adolescent sexual offender with an intellectual disability: A novel application of exposure and response prevention. *Clinical Case Studies, 6*(4), 307–324. https://doi.org/10.1177/1534650106288235
- \*Thompson, A.R. and Beail, N. (2002), The Treatment of Auto-erotic Asphyxiation in a Man with Severe Intellectual Disabilities: the Effectiveness of a Behavioural and Educational Programme. *Journal of Applied Research in Intellectual Disabilities, 15*, 36-47. https://doi.org/10.1046/j.1360-2322.2001.00095.x
- \*Visser, K., Greaves-Lord, K., Tick N.T., Verhulst, F.C., Mara, A., van der Vegt, E.J.M. (2017). A randomized controlled trial to examine the effects of the Tackling Teenage psychosexual training program for adolescents with autism spectrum disorder. *Journal of child psychology and psychiatry, and allied disciplines 58(7)*, 840-850. https://doi.org/https://doi.org/10.1111/jcpp.12709
- Walker, N. (2014). *Neurodiversity: Some basic terms and definitions*. Retrieved from <u>http://neurocosmopolitanism.com/neurodiversity-some-basic-terms-definitions/</u>
- Weiss, J. A., & Fardella, M. A. (2018). Victimisation and perpetration experiences of adults with autism. *Frontiers in Psychiatry*, 9, 203. <u>https://doi.org/10.1007/s11195-013-9286-</u> <u>8</u>

# Appendix A: Outline of search terms and queries



EbSCONOS			Friday, February 10, 2023 5:13:27 AM	I
#	Query	Limiters/Expanders	Last Run Via	Results
S7	S3 AND S4	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	6
S6	TI ( "young people" OR Adolescen* OR Teenage* OR Child* OR Youth OR "young person" OR Juvenile ) OR AB ( "young people" OR Adolescen* OR Teenage* OR Child* OR Youth OR "young person" OR Juvenile )	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	991,839
S5	TI ( intervention OR program* ) OR AB ( intervention OR program* )	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	793,695
S4	TI ("harmful* sexual behav*" OR HSB OR "problem sexual behav*" OR "sexual* harmful behav*" OR "concern* sex* behav*" OR "reactive sexual* behav*") OR AB ("harmful* sexual behav*" OR HSB OR "problem sexual behav*" OR "sexual* harmful behav*" OR "concern* sex* behav*" OR "reactive sexual* behav*")	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	309
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Find all my search	Interface - EBSCOhost Research Databases Search Screen - Advanced Search	66,521

https://web.s.ebscohost.com/ehost/searchhistory/PrintSearchHistory?sid=6bad17bb-ac3f-4f33-9764-40366eb9ef81%40redis&vid=36&bk=1&bquery=((TI+("autism+spectrum+diagnos"+OR+ASD+OR+Autis+OR+ASD-1/2

2/10/23, 4:13 PM		Print Search History: EBS	COhost	
		terms	Database - APA PsycInfo	
S2 DE "A	utism Spectrum Disorders"	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	52,896
S1 TI ("au ASD ( spectr spectr Autis* disord condit	utism spectrum diagnos*" OR DR Autis* OR ASC OR "autism um disorder" OR "autism um condition") OR AB ("autism um diagnos*" OR ASD OR OR ASC OR "autism spectrum ler" OR "autism spectrum ion")	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - APA PsycInfo	63,835