

Sex and Sexuality in Autism Spectrum Disorders

Subjects: **Neurosciences**

Contributor: Maria Grazia Maggio , Patrizia Calatozzo , Antonio Cerasa , Giovanni Pioggia , Angelo Quartarone , Rocco Salvatore Calabrò

Autism spectrum disorder (ASD) consists of a set of permanent neurodevelopmental conditions, which are studied with social and communication differences, limited interests, and repetitive behaviors. Individuals with ASD have difficulty reading eye gestures and expressions, and may also have stereotyped or repetitive language, excessive adherence to routines, fixed interests, and rigid thinking. The relationship difficulties resulting from ASD do not allow individuals to relate adequately to others, leading to unwanted sexual contact, social isolation, and mental health disorders.

autism spectrum disorder

gender dysphoria

sexual awareness

sexual behavior

sexual identity

sexual orientation

1. Introduction

Autism spectrum disorder (ASD) is a developmental disability characterized by alterations in social interaction, verbal/non-verbal communication, and behavior ^[1]. The *Diagnostic and Statistical Manual of Mental Disorders—5th Edition* (DSM-5) defines ASD as the occurrence of persistent impairments in social interaction and the presence of limited and repetitive patterns of behavior, interests, or activities ^[2]. Individuals with ASD have difficulty in social communication, such as reading eye gestures and expressions ^{[3][4]} and may also have stereotyped or repetitive language, excessive adherence to routines, fixed interests, and rigid thinking. Social cognition, which concerns the detection, processing, and use of social information to regulate interpersonal functioning and effective social behavior, is particularly affected in ASD ^{[2][3][4]}. ASD individuals may have different cognitive profiles, and, in some cases, they may present atypical sensory perception and difficulties in processing information and motor skills. However, ASD is heterogeneous and exhibits a wide spectrum of intellectual abilities ^[2].

ASD prevalence estimates have increased in recent years, and approximately 1–2% of the population is diagnosed with ASD ^[5]. ASD is widespread and an estimated 1 in 44 children has been identified with this diagnosis according to CDC Autism and Developmental Disabilities Monitoring Network estimates ^[5]. ASD is more common among boys than among girls (3/4:1) ^[5], and the syndrome occurs early in life with symptoms appearing within the first 2 years. Young patients may have little ability to interact with others and engage in romantic relationships ^[6]; therefore, ASD individuals may experience difficulties in sexual interactions as they grow up ^{[7][8][9]}.

To deal with this problem, it is essential to consider data on normative sexuality in adolescents. Ongoing studies on the topic have mainly focused on sexual behaviors, while other components, such as sexual desire, function, arousal, and experience, are poorly investigated, and they have been mostly considered only in the adult population [10][11][12][13][14]. Studies on the development of sexuality have found that the onset of puberty in adolescents is earlier than decades ago. In addition, the age for sexual debut has also advanced, both for masturbatory acts and in couples, which starts from 12 years [10][13]. Additionally, studies report that most teens define themselves as heterosexual, although uncertainty about sexual orientation is on the rise [10][12], and new policies are needed to improve the mental health of gender and sexual minorities [14]. On the other hand, the studies on the topic of ASD are still poor and very confusing.

Decades ago, people with ASD were thought to be “asexual” [15]. However, it is known that they experience an intense desire for love, and romantic and/or sexual relationships, especially in highly functioning young people [16][17][18]. Some studies have shown that the interest shown/expressed by individuals with ASD can be similar to that of N-ASD individuals, and the substantial difference lies in the completeness of the relational experience [19][20]. In summary, the relationship difficulties resulting from ASD do not allow individuals to relate adequately to others, leading to unwanted sexual contact, social isolation, and mental health disorders [21][22]. Indeed, Stokes et al. have shown that people with ASD fail to learn various aspects of sexual functioning, as occurs in peers, preventing them from obtaining adequate sex education due to fewer opportunities for social contact [18]. Indeed, information on sexual well-being and behavior is often provided by parents or educators [23]. In recent years, the use of technologies and the Internet to obtain more information on sexuality by people with ASD has also become increasingly widespread [24][25][26]. However, this can carry the risk of inadequate and unclear ideas and norms, which can incentivize inappropriate behavior [27]. Another aspect to consider in ASD sexuality concerns the different sensations and sensitivities compared to N-ASD sexuality, which can influence the modality of sexual physical contact [28].

Recently, it has been observed that there are significant differences between ASD and N-ASD individuals in various areas of sexual activity and sexual orientation. ASD individuals, especially women, are more likely to indicate sexuality with lower libido/sexual desire [29][30][31], higher asexuality rates [30][32], reduced heterosexuality [31][32][33], elevated hypersexual behavior/fantasies [34], and a higher incidence of “non-heterosexual” orientation (including homosexuality and bisexuality) [29][32][33].

A recent study with a very large sample found that individuals with high autistic traits tended to identify themselves more (1.73 times, 95% CI: 1.01–2.90) as bisexual or presented a sexuality not definable within the categories of heterosexual, homosexual, or bisexual [35]. Moreover, in a sample of women with ASD, there was found an increased prevalence of bisexual or homosexual orientation [36].

2. Sexual Awareness

Sexual awareness is the knowledge and perception of feelings, desires, motivations, and situations related to sex. “Awareness” is essential to understand sexuality and sexual social relations, especially in individuals with

developmental disorders [37]. Sexual awareness depends on the processes of cognitive attention and the ability to perceive sexual sensations and behaviors [38].

According to Snell et al. [38], awareness is based on four aspects: (1) sexual consciousness, which allows reflecting and thinking about your sexual properties since it consists in paying attention to one's own signals of sexual arousal and motivation; (2) sexual monitoring that consists of the perception of the evaluation of others on one's own sexuality; (3) sexual assertiveness, consisting in being assertive about one's sexuality; and (4) consciousness of sexual appeal, which concerns the awareness of one's own public sensuality.

These four areas in individuals with ASD are poorly developed, as they have low self-awareness and difficulty perceiving the mental states of others [39]. A study carried out by Hannah and Stagg found that subjects with ASD had significantly lower scores than N-ASD peers on all dimensions of sexual awareness, suggesting that young people with ASD should be educated about sexual aspects differently to peers [37]. Nonetheless, given that they may have difficulties initiating/interpreting sexual behavior and contextualizing sexual activities (e.g., masturbation), specific sexual coaching could help this patient population [40]. These results were recently confirmed by Pecora et al. The authors noted a growing awareness of the desire for sexual relationships in ASD individuals, although they pointed out that the relationship difficulties in ASD may cause a greater risk of engaging in inappropriate sexual behavior and sexual victimization than N-ASD peers [36]. Another interesting aspect of awareness is related to privacy rules [29][41][42]. In fact, Stokes and Kaur [41] found significant differences between ASD and N-ASD young people. ASD adolescents showed poorer social behaviors, fewer behaviors and knowledge about privacy rules, less sex education, and increased inappropriate sexual behavior. In addition, parents of ASD adolescents presented greater concerns than the N-ASD parents. Ginevra et al. have found that privacy awareness is lower in individuals with ASD than in N-ASD individuals [42]. As a result, patients affected by ASD may have less awareness of sexual situations and the privacy rules to be respected, with a greater risk of inappropriate or abusive behavior [42].

3. Sexual Identity and Gender Dysphoria

Gender is established on an anatomical basis at the time of birth according to the sexual genetic endowment, that is, on the basis of how the external genital organs present themselves. Gender does not always coincide with gender identity, which represents the perception that everyone has of themselves as male or female, or sometimes as belonging to categories other than male or female. In fact, gender dysphoria, i.e., affective and cognitive discomfort in relation to the gender that is anatomically assigned to us, can occur. It consists of a condition of separation between sex and gender identity [10], so it concerns the feeling of belonging to a different gender than the anatomical one, or the feeling of not entirely belonging to either the female or male gender or with fluid gender identity, oscillating over time between the feminine and the masculine. The concept of gender dysphoria was introduced in DSM-V to indicate the phenomenon of "gender inconsistency". In particular, the criteria for identifying gender dysphoria are a marked inconsistency between experienced gender and primary/secondary sexual characteristics; a strong desire to get rid of one's primary and/or secondary sexual characteristics; an intense desire for the sexual characteristics of the opposite gender, to belong to the opposite gender, and to be treated as

a member of the opposite gender; the presence of a strong belief that you have feelings and reactions typical of the opposite gender; and, finally, the condition must be associated with clinically significant suffering [2].

In recent years, some authors have addressed the relationship between ASD and gender diversity and dysphoria [43][44][45][46][47][48][49][50][51][52][53]. Some researchers evaluated the co-occurrence of gender dysphoria and ASD [43][44][45][46][47][48][49][50][51][52][53], indicating that gender dysphoria and autism may be concomitant [50][52]. Other authors noted that the co-presence of gender dysphoria and ASD may be due to the unusual interests of ASD individuals, or as an expression of obsessive-compulsive disorder [49][51]. In any case, the results of these studies should be treated with caution, as many refer to case studies/series, and there are limitations in sampling and evaluation. Nevertheless, the current literature shows that ASD adolescents have a greater desire to belong to a gender other than their anatomical one compared to N-ASD adolescents [53]. Warrier et al. reported higher rates of autism diagnosis in transgender and gender-different adults than cisgender controls [54]. Estimates of gender dysphoria in N-ASD individuals range from 1:10,000 to 1:20,000 in men and 1:30,000 to 1:50,000 in women [55], whereas the prevalence rates in ASD individuals are in the range of 60 per 10,000 [56], and in some studies the prevalence is higher than 1% [57]. These results are in agreement with the literature, highlighting increased gender dysphoria in subjects diagnosed with autism [58][59]. Other studies have shown high levels of gender variance among ASD adults [60][61], as well as a high desire to belong to a gender other than the anatomical one [47]. Bejerot and Eriksson, in a study carried out on 50 adults with ASD and 53 controls, observed that men and women with ASD were classified with a less masculine gender role than controls. Furthermore, individuals with ASD reported atypical gender identity compared to controls [29]. In line with these results, a meta-analysis performed by Kallitsounaki and Williams highlighted a relationship between ASD traits and gender dysphoria in the general population [62].

4. Sexual Orientation

While gender identity is about the perception of oneself, sexual orientation consists of ways of relating to others and feeling romantic or sexual attraction for people of one gender rather than another. Sexual orientation does not coincide with gender: they are two different things, which can combine with each other in many ways and in different degrees [63]. Sexual orientation is determined by a mix of biological, environmental, and psychological factors. It persists over time, but sexual orientation and sexual identity are fluid in nature. In fact, one's understanding or experience of one's sexuality may change or evolve, and the orientation and sexual identity with it. Many people discover their sexual orientation at a young age, typically around puberty; for some, patterns of attraction, behavior, and self-identification remain stable throughout their lives, and for others these patterns develop more slowly.

Thus, sexual orientation is a complex construct that includes three main domains: attraction, contact, and identity, distinct from each other [64], and it is influenced by various socio-cultural factors [65]. There are myriad ways to describe sexual orientation, but the most common include: heterosexual, being attracted to the opposite gender; homosexual, being attracted to the same gender; and bisexual, being attracted to more than one gender. People who do not experience sexual attraction are sometimes called asexual; people who do not experience romantic

attraction are sometimes called aromantic. However, because sexual orientation is complex and multifaceted, some find that a single term is inadequate to describe their experience and come up with their own new terms or combinations that they feel best describe them. Moreover, it is not correct to apply to “orientation” the statistical term of normality (that is what the majority do or profess); researchers prefer to talk in terms of prevalent sexual orientation (at least the one declared) and its physiological variants [66].

Some studies on ASD have shown higher rates of non-heterosexuality as compared to N-ASD peers [8][16][35][67][68]. Gilmour and coworkers observed that individuals with ASD have higher rates of asexuality, bisexuality, and homosexuality, as well as lower rates of heterosexuality than N-ASD controls [69]. An interesting finding was that females with ASD had less heterosexual orientation than males. This is also confirmed by another Swedish study in which females with ASD reported higher rates of homosexuality and bisexuality (58.3%) than controls (16%) [29]. Recently, George and Stokes carried out a study to evaluate sexual orientation between individuals with and without ASD [61]. The authors found that in all areas related to sexual orientation, males and females with ASD had fewer rates of heterosexuals, and reported more homosexuality, bisexuality, and asexuality than their sex-matched N-ASD peers. Moreover, in the study the authors report that “non-heterosexuality” is more pronounced among females than males with ASD. Another study carried out by the same authors confirmed these findings, highlighting that ASD individuals report an increase in homosexuality, bisexuality, and asexuality, but a decrease in heterosexuality [32].

In particular, the theme of asexuality is very interesting. Asexuality is a lack of sexual attraction for any gender. Some authors have found that many ASD individuals self-identify as asexual, possibly caused by deficits in social interaction and communication [30][70][71][72][73]. A recent review of the literature pointed out that asexuality and autism have similar aspects, such as the conception of the romantic dimensions, sexual attraction, and sexual orientation, as well as non-partner-oriented sexual desire [69]. Despite various findings, Ronis et al. suggest that researchers should be cautious about attributing higher asexuality rates among individuals with ASD than the general population by accurately assessing sexual identity [74].

Moreover, recent research has also found particular sexual orientations, such as emotional, romantic, and/or sexual attraction to inanimate objects (such as a bridge or a statue), termed objectophilia. Simner et al. found in 34 individuals with objectophilia that sexual orientation could be linked to autism and synaesthesia [75].

5. Sexual Behavior

Subjects with ASD may experience difficulties in multiple social areas, such as physical contact, self-understanding, and social interaction, which lead to stereotyped or ritualized mannerisms. However, various studies have shown that many ASD adults may exhibit healthy sexual functioning and experience sexual intimacy [8][16]. Despite these studies, the sexual behavior of people with ASD is often overlooked. Usually, sexual feelings are expressed through masturbation, alone or in the presence of other people. Instead, sexual activity toward a person is represented by touching or kissing the “partner”, often in an unwanted way [24]. A study carried out by Helleman et al. indicated that individuals with high-functioning ASD may express both sexual interest and various

sexual behaviors [24]. In fact, the authors identified a high interest in relationships and the establishment of relationships with age-appropriate sexual behavior. In particular, masturbation occurred in 80% of male adolescents in the 14–15-year-old age group and in 90% in the 16–19-year-old age group, as confirmed by previous studies [76]. Furthermore, Byers et al. in a survey on individuals with ASD (age 21–73, mean age 35.3) found that 59% of the group had a romantic relationship of at least 3 months [16]. Dewinter et al. observed that a couple of sexual acts in ASD males had the same frequency as those in non-ASD subjects [26]. These results were confirmed also by Simcoe et al. [77]. However, Hartmann found that ASD young adults seek more privacy and engage in more typical sexual behaviors and higher sexual victimization than their parents reported [78].

Another aspect highlighted in some studies is that ASD individuals tend to exhibit more deviant sexual behavior than their N-ASD peers. In these cases, it is important to separate typical sexual behaviors, such as general sexual curiosity, masturbation, and interest in the genitals of peers or siblings, from uncommon behaviors, such as explicit imitation of sexual acts, asking to engage in sexual activity, inserting objects into the genitals, and frequent sexual behaviors that are resistant to distraction [79][80].

In particular, excessive masturbation [81][82]; exhibitionist behaviors [83]; pedophilic fantasies or behaviors [84]; fetishistic fantasies or behaviors [85]; sadomasochism [86] or other forms of paraphilias [87]; and hypersexuality [34] have been reported. Thus, it is clear that ASD subjects have adequate sexual development and sexual behavior, even if in some cases it is more deviant than that of N-ASD subjects.

References

1. Weir, E.; Allison, C.; Baron-Cohen, S. The sexual health, orientation, and activity of autistic adolescents and adults. *Autism Res.* 2021, 14, 2342–2354.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed.; American Psychiatric Publishing: Washington, DC, USA, 2013.
3. Guillon, Q.; Hadjikhani, N.; Baduel, S.; Roge, B. Visual social attention in autism spectrum disorder: Insights from eye tracking studies. *Neurosci. Biobehav. Rev.* 2014, 42, 279–297.
4. Penuelas-Calvo, I.; Sareen, A.; Sevilla-Llewellyn-Jones, J.; Fernandez-Berrocal, P. The “reading the mind in the eyes” test in autism-spectrum disorders comparison with healthy controls: A systematic review and meta-analysis. *J. Autism Dev. Disord.* 2019, 49, 1048–1061.
5. Maenner, M.J.; Shaw, K.A.; Bakian, A.V.; Bilder, D.A.; Durkin, M.S.; Esler, A.; Furnier, S.M.; Hallas, L.; Hall-Lande, J.; Hudson, A.; et al. Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years—Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2018. *MMWR Surveill. Summ.* 2021, 70, 1–16.

6. Prior, M.; Ozonoff, S. Psychological factors in autism. In *Autism and Pervasive Developmental Disorders*; Volkmar, F.R., Ed.; Cambridge University Press: Cambridge, UK, 1998; pp. 64–108.
7. Henault, I. *Asperger's Syndrome and Sexuality: From Adolescence through Adulthood*; Jessica Kingsley Publishers Ltd: London, UK, 2005.
8. Dewinter, J.; Vermeiren, R.; Vanwesenbeeck, I.; van Nieuwenhuizen, C. Autism and normative sexual development: A narrative review. *J. Clin. Nurs.* 2013, 22, 3467–3483.
9. Dewinter, J.; Vermeiren, R.; Vanwesenbeeck, I.; van Nieuwenhuizen, C. Adolescent boys with autism spectrum disorder growing up: Follow-up of self-reported sexual experience. *Eur. Child Adol. Psych.* 2016, 25, 969–978.
10. Diamond, L.M.; Savin-Williams, R.C. Adolescent sexuality. In *Handbook of Adolescent Psychology, Volume 1: Individual Bases of Adolescent Development*, 3rd ed.; Lerner, R.M., Steinberg, L., Eds.; Wiley: Hoboken, NJ, USA, 2009; pp. 479–523.
11. Fortenberry, J.D. Puberty and adolescent sexuality. *Horm. Behav.* 2013, 64, 280–287.
12. Moore, S.; Rosenthal, D. *Sexuality in Adolescence: Current Trends*; Taylor & Francis: Hove, UK, 2006.
13. De Graaf, H.; Kruijer, H.; van Acker, J.; Meijer, S. *Sex under the Age of 25: Sexual Health among Youth in the Netherlands in 2012*; Eburon: Delft, The Netherlands, 2012.
14. Lucassen, M.F.G.; Núñez-García, A.; Rimes, K.A.; Wallace, L.M.; Brown, K.E.; Samra, R. Coping Strategies to Enhance the Mental Wellbeing of Sexual and Gender Minority Youths: A Scoping Review. *Int. J. Env. Res. Public Health* 2022, 19, 8738.
15. Zigler, E.; Hodapp, R. *Understanding Mental Retardation*; Cambridge University Press: New York, NY, USA, 1986.
16. Byers, E.S.; Nichols, S.; Voyer, S.D.; Reilly, G. Sexual well-being of a community sample of high-functioning adults on the autism spectrum who have been in a romantic relationship. *Autism* 2013, 17, 418–433.
17. Holmes, L.G.; Himle, M.B. Brief report: Parent-child sexuality communication and autism spectrum disorders. *J. Autism Dev. Dis.* 2014, 44, 2964–2970.
18. Sala, G.; Hooley, M.; Stokes, M.A. Romantic Intimacy in Autism: A Qualitative Analysis. *J. Autism Dev. Disord.* 2020, 50, 4133–4147.
19. Mehzabin, P.; Stokes, M. Self-assessed sexuality in young adults with High-Functioning Autism. *Res. Autism Spectr. Disord.* 2011, 5, 614–621.
20. Ousley, O.Y.; Mesibov, G.B. Sexual attitudes and knowledge of high-functioning adolescents and adults with autism. *J. Autism Dev. Disord.* 1991, 21, 471–481.

21. Brown-Lavoie, S.M.; Viecili, M.A.; Weiss, J.A. Sexual Knowledge and Victimization in adults with Autism Spectrum Disorders. *J. Autism Develop. Dis.* 2014, 44, 2185–2196.
22. Hatton, S.; Tector, A. Sexuality and relationship education for young people with Autistic Spectrum Disorder: Curriculum change and staff support. *Br. J. Spec. Educ.* 2010, 37, 69–76.
23. Koller, R. Sexuality and adolescents with Autism. *Sex Dis.* 2000, 18, 125–135.
24. Stokes, M.; Newton, N.; Kaur, A. Stalking, and social and romantic functioning among adolescents and adults with autism spectrum disorder. *J Autism. Dev. Dis.* 2007, 37, 1969–1986.
25. Hellemans, H.; Colson, K.; Verbraeken, C.; Vermeiren, R.; Deboutte, D. Sexual behavior in high-functioning male adolescents and young adults with autism spectrum disorder. *J. Autism Dev. Dis.* 2007, 37, 260–269.
26. Dewinter, J.; Vermeiren, R.; Vanwesenbeeck, I.; Lobbestael, J.; van Nieuwenhuizen, C. Sexuality in adolescent boys with autism spectrum disorder: Self-reported behaviors and attitudes. *J. Autism Dev. Dis.* 2015, 45, 731–741.
27. Chia, S.C.; Gunther, A.C. How media contribute to misperceptions of social norms about sex. *Mass. Comm. Soc.* 2006, 9, 301–320.
28. Aston, M.C. *Aspergers in Love: Couple Relationships and Family Affairs*; Jessica Kingsley: London, UK, 2005.
29. Bejerot, S.; Eriksson, J.M. Sexuality and gender role in autism spectrum disorder: A case control study. *PLoS ONE* 2014, 9, e87961.
30. Bush, H.H.; Williams, L.W.; Mendes, E. Brief Report: Asexuality and Young Women on the Autism Spectrum. *J. Autism Dev. Disord.* 2021, 51, 725–733.
31. Pecora, L.A.; Hancock, G.I.; Mesibov, G.B.; Stokes, M.A. Characterising the Sexuality and Sexual Experiences of Autistic Females. *J. Autism Dev. Disord.* 2019, 49, 4834–4846.
32. George, R.; Stokes, M.A. Sexual Orientation in Autism Spectrum Disorder. *Autism Res.* 2018, 11, 133–141.
33. Dewinter, J.; van Parys, H.; Vermeiren, R.; van Nieuwenhuizen, C. Adolescent boys with an autism spectrum disorder and their experience of sexuality: An interpretative phenomenological analysis. *Autism* 2017, 21, 75–82.
34. Schöttle, D.; Briken, P.; Tüscher, O.; Turner, D. Sexuality in autism: Hypersexual and paraphilic behavior in women and men with high-functioning autism spectrum disorder. *Dialogues Clin. Neurosci.* 2017, 19, 381–393.
35. Rudolph, C.E.S.; Lundin, A.; Åhs, J.W.; Dalman, C.; Kosidou, K. Brief Report: Sexual Orientation in Individuals with Autistic Traits: Population Based Study of 47,000 Adults in Stockholm County.

- J. Autism Dev. Disord. 2018, 48, 619–624.
36. Pecora, L.A.; Hooley, M.; Sperry, L.; Mesibov, G.B.; Stokes, M.A. Sexuality and Gender Issues in Individuals with Autism Spectrum Disorder. *Child Adolesc. Psychiatr. Clin.* 2021, 44, 111–124.
 37. Hannah, L.A.; Stagg, S.D. Experiences of Sex Education and Sexual Awareness in Young Adults with Autism Spectrum Disorder. *J. Autism Dev. Disord.* 2016, 46, 3678–3687.
 38. Snell, W.E.; Terri, D.; Miller, R. Development of the Sexual Awareness Questionnaire: Components, Reliability and Validity. *Ann. Sex Res.* 1991, 4, 62–92.
 39. Verhoeven, E.W.M.; Marijnissen, N.; Berger, H.J.C.; Oudshoorn, J.; van der Sijde, A.; Teunisse, J.P. Brief Report: Relationship Between Self-Awareness of Real-World Behavior and Treatment Outcome in Autism Spectrum Disorders. *J. Autism Dev. Dis.* 2012, 42, 889.
 40. Calabrò, R.S.; Pioggia, G.; Contrada, M.; Cerasa, A. Sexual Coach in High-Functioning Autism: A Growing Need. *Brain Sci.* 2022, 12, 964.
 41. Stokes, M.A.; Kaur, A. High-functioning autism and sexuality. *Autism* 2005, 9, 266–289.
 42. Ginevra, M.C.; Nota, L.; Stokes, M.A. The differential effects of Autism and Down's syndrome on sexual behavior. *Autism Res.* 2016, 9, 131–140.
 43. Glidden, D.; Bouman, W.P.; Jones, B.A.; Arcelus, J. Gender dysphoria and autism spectrum disorder: A systematic review of the literature. *Sex. Med. Rev.* 2016, 4, 3–14.
 44. Øien, R.A.; Cicchetti, D.V.; Nordahl-Hansen, A. Gender dysphoria, sexuality and autism spectrum disorders: A systematic map review. *J. Autism Dev. Disord.* 2018, 48, 4028–4037.
 45. Sala, G.; Hooley, M.; Attwood, T.; Mesibov, G.B.; Stokes, M.A. Autism and intellectual disability: A systematic review of sexuality and relationship education. *Sex Disabil.* 2019, 37, 353–382.
 46. Hendriks, O.; Wei, Y.; Warrier, V.; Richards, G. Autistic Traits, Empathizing-Systemizing, and Gender Diversity. *Arch. Sex Behav.* 2022, 51, 2077–2089.
 47. Van der Miesen, A.I.R.; Hurley, H.; Bal, A.M.; de Vries, A.L.C. Prevalence of the wish to be of the opposite gender in adolescents and adults with autism spectrum disorder. *Arch. Sex Beh.* 2018, 47, 2307–2317.
 48. Gallucci, G.; Hackerman, F.; Schmidt, C.W. Gender identity disorder in an adult male with Asperger's syndrome. *Sex Disabil.* 2005, 23, 35–40.
 49. Kraemer, B.; Delsignore, A.; Gundelfinger, R.; Schnyder, U.; Hepp, U. Comorbidity of Asperger syndrome and gender identity disorder. *Eur. Child Adol. Psych.* 2005, 14, 292–296.
 50. Mukaddes, N.M. Gender identity problems in autistic children. *Child Care Health Dev.* 2002, 28, 529–532.

51. Perera, H.; Gadambanathan, T.; Weerasiri, S. Gender identity disorder presenting in a girl with Asperger's disorder and obsessive compulsive disorder. *Ceylon Med. J.* 2003, 48, 57–58.
52. Tateno, M.; Tateno, Y.; Saito, T. Comorbid childhood gender identity disorder in a boy with Asperger syndrome. *Psych. Clin. Neurosc.* 2008, 62, 238.
53. De Vries, A.L.; Noens, I.L.; Cohen-Kettenis, P.T.; van Berckelaer-Onnes, I.A.; Doreleijers, T.A. Autism spectrum disorders in gender dysphoric children and adolescents. *J. Autism Dev. Disord.* 2010, 40, 930–936.
54. Warrier, V.; Greenberg, D.M.; Weir, E.; Buckingham, C.; Smith, P.; Lai, M.C.; Allison, C.; Baron-Cohen, S. Elevated rates of autism, other neurodevelopmental and psychiatric diagnoses, and autistic traits in transgender and gender-diverse individuals. *Nat. Commun.* 2020, 11, 3959.
55. Zucker, K.J.; Lawrence, A.A. Epidemiology of gender identity disorder: Recommendations for the standards of care of the world professional association for transgender health. *Int. J. Transgend.* 2009, 11, 8–18.
56. Fombonne, E. Epidemiology of autistic disorder and other pervasive developmental disorders. *J. Clin. Psych.* 2005, 66, 3–8.
57. Baird, G.; Simonoff, E.; Pickles, A.; Chandler, S.; Loucas, T.; Meldrum, D.; Charman, T. Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: The special needs and autism project (SNAP). *Lancet* 2006, 368, 210–215.
58. Jones, R.M.; Wheelwright, S.; Farrell, K.; Martin, E.; Green, R.; Di Ceglie, D.; Baron-Cohen, S. Brief report: Female-to-male transsexual people and autistic traits. *J. Autism Dev. Dis.* 2012, 42, 301–306.
59. Pasterski, V.; Gilligan, L.; Curtis, R. Traits of autism spectrum disorders in adults with gender dysphoria. *Arch. Sex. Behav.* 2014, 43, 387–393.
60. Cooper, K.; Smith, L.G.E.; Russell, A.J. Gender identity in autism: Sex differences in social affiliation with gender groups. *J. Autism Dev. Disord.* 2018, 48, 3995–4006.
61. George, R.; Stokes, M.A. A quantitative analysis of mental health among sexual and gender minority groups in ASD. *J. Autism Dev. Disord.* 2018, 48, 2052–2063.
62. Kallitsounaki, A.; Williams, D.M. Autism Spectrum Disorder and Gender Dysphoria/Incongruence. A Systematic Literature Review and Meta-Analysis. *J. Autism Dev. Disord.* 2022, 2022, 1–15.
63. Kinsey, A.C.; Martin, C.E. *Sexual Behavior in the Human Male*; W.B. Saunders: Philadelphia, PA, USA, 1948/1998; pp. 636–659.
64. Ross, M.W.; Essien, E.J.; Williams, M.L.; Fernandez-Esquer, M.E. Concordance between sexual behavior and sexual identity in street outreach samples of four racial/ethnic groups. *Sex. Transm. Dis.* 2003, 30, 110–113.

65. Pathela, P.; Hajat, A.; Schillinger, J.; Blank, S.; Sell, R.; Mostashari, F. Discordance between sexual behavior and self-reported sexual identity: A populationbased survey of New York City men. *Ann. Int. Med.* 2006, 145, 416–425.
66. National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Committee on National Statistics; Committee on Measuring Sex, Gender Identity, and Sexual Orientation. *Measuring Sex, Gender Identity, and Sexual Orientation*; Becker, T., Chin, M., Bates, N., Eds.; National Academies Press: Washington, DC, USA, 2022.
67. Hellemans, H.; Roeyers, H.; Leplae, W.; Dewaele, T.; Deboutte, D. Sexual behavior in male adolescents and young adults with autism spectrum disorder and borderline/mild mental retardation. *Sex Dis.* 2010, 28, 93–104.
68. Fernandes, L.C.; Gillberg, C.I.; Cederlund, M.; Hagberg, B.; Gillberg, C.; Billstedt, E. Aspects of sexuality in adolescents and adults diagnosed with autism spectrum disorders in childhood. *J. Aut. Dev. Dis.* 2016, 46, 3155–3165.
69. Gilmour, L.; Schalomon, M.; Smith, V. Sexuality in a community based sample of adults with autism spectrum disorder. *Res. Autism Spectr. Dis.* 2012, 6, 313–318.
70. Attanasio, M.; Masedu, F.; Quattrini, F.; Pino, M.C.; Vagnetti, R.; Valenti, M.; Mazza, M. Are Autism Spectrum Disorder and Asexuality Connected? *Arch. Sex Behav.* 2022, 51, 2091–2115.
71. Bogaert, A.F. Asexuality: Prevalence and associated factors in a national probability sample. *J. Sex Res.* 2004, 41, 279–287.
72. Bogaert, A.F. Toward a conceptual understanding of asexuality. *Rev. Gen. Psychol.* 2006, 10, 241–250.
73. Strunz, S.; Schermuck, C.; Ballerstein, S.; Ahlers, C.J.; Dziobek, I.; Roepke, S. Romantic relationships and relationship satisfaction among adults with asperger syndrome and highfunctioning autism. *J. Clin. Psyc.* 2017, 73, 113–125.
74. Ronis, S.T.; Byers, E.S.; Brotto, L.A.; Nichols, S. Beyond the Label: Asexual Identity Among Individuals on the High-Functioning Autism Spectrum. *Arch. Sex. Behav.* 2021, 50, 3831–3842.
75. Simner, J.; Hughes, J.E.A.; Sagiv, N. Objectum sexuality: A sexual orientation linked with autism and synaesthesia. *Sci. Rep.* 2019, 9, 19874.
76. Vogels, T.; van der Vliet, R. *Jeugd en Seks. Gedrag en Gezondheidsrisico's Bij Scholieren*; SDU: Gravenhage, The Netherlands, 1990.
77. Simcoe, S.M.; Gilmour, J.; Garnett, M.S.; Attwood, T.; Donovan, C.; Kelly, A.B. Are there gender-based variations in the presentation of Autism amongst female and male children? *J. Autism Dev. Disord.* 2022, 2022, 1–9.

78. Hartmann, K.; Urbano, M.R.; Raffaele, C.T.; Kreiser, N.L.; Williams, T.V.; Qualls, L.R.; Elkins, D.E. Outcomes of an emotion regulation intervention group in young adults with autism spectrum disorder. *Bull. Menn. Clin.* 2019, 83, 259–277.
79. Kellogg, N.D. Committee on Child Abuse and Neglect, American Academy of Pediatrics. Clinical report--the evaluation of sexual behaviors in children. *Pediatrics* 2009, 124, 992–998.
80. Kenny, M.C.; Abreu, R.L. Training mental health professionals in child sexual abuse: Curricular guidelines. *J. Child Sex. Abus.* 2015, 24, 572–591.
81. Hergüner, S.; Hergüner, A.; Cicek, E. Combination of risperidone and paroxetine for inappropriate sexual behaviors in an adolescent with autism and mental retardation. *Arch. Neuropsychiatry* 2012, 49, 311–313.
82. Deepmala, A.M. Use of propranolol for hypersexual behavior in an adolescent with autism. *Ann. Pharm.* 2014, 48, 1385–1388.
83. Coshway, L.; Broussard, J.; Acharya, K.; Fried, K.; Msall, M.E.; Lantos, J.D.; Nahata, L. Medical therapy for inappropriate sexual behaviors in a teen with autism spectrum disorder. *Pediatrics* 2016, 137, e20154366.
84. Fosdick, C.; Mohiuddin, S. Case report: Resolution of severe sexual aggression in a developmentally disabled adolescent during leuprolide acetate use. *J. Autism Dev. Disord.* 2016, 46, 2267–2269.
85. Early, M.C.; Erickson, C.A.; Wink, L.K.; McDougale, C.J.; Scott, E.L. Case report: 16-year old male with autistic disorder with preoccupation with female feet. *J. Autism Dev. Disord.* 2012, 42, 1133–1137.
86. Müller, J.L. Are sadomasochism and hypersexuality in autism linked to amygdalohippocampal lesion? *J. Sex. Med.* 2011, 8, 3241–3249.
87. Silva, J.A.; Leong, G.B.; Ferrari, M.M. Paraphilic psychopathology in a case of autism spectrum disorder. *Am. J. Forensic Psychiatry* 2003, 24, 5–20.

Retrieved from <https://encyclopedia.pub/entry/history/show/78920>